



AMERICAN ARTISAN

RESIDENTIAL AIR CONDITIONING
WARM AIR HEATING--SHEET METAL CONTRACTING

Price Next Winter!
YOUR Job is to Put A/C
Top Operating Condition
(SFA) N.O.P., N.P.B., F.H.A.'s Summer

JULY, 1945

Ten Services You Can Offer to Save Fuel

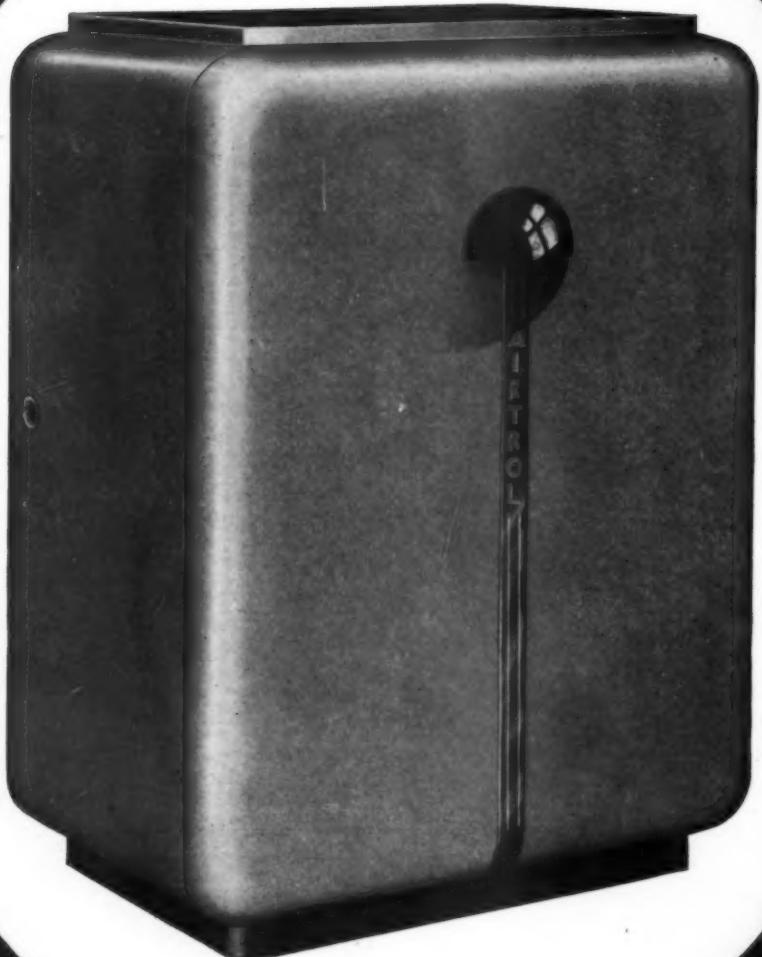
Konzo—How Manual Insures Better Blower Operation

"Grain Movement" in Press Brake Forming

Page 58

Page 76

Page 86



Airtrol

AIR CONDITIONING UNIT

Superb styling and unexcelled performance are combined in this outstanding line of blower-filter units. Airtrol Units are completely assembled—wired and ready for installation—eliminating costly "on the job" assembly. Built of heavy gauge steel—all welded construction—finished in an attractive gloss baked enamel—Airtrol Units are of the same high quality that is characteristic of all Air Control products. Many outstanding features have been combined in Airtrol Air Conditioning Units—long hour, thermal protected motor—plug-in wiring—top motor mounting—light weight blower—spring fastened filters, etc. A complete range of sizes for your every need.

Call your Air Control Jobber for complete information—or write for Bulletin 19 AC.

A product of—

AIR CONTROL PRODUCTS, INC.
COOPERSVILLE MICHIGAN



AMERI

HERE'S A COST-CUTTER!



Here's a sheet-metal man's tool that cuts cutting costs in the shop and on the job. Light and compact, it does the work of a shear—easier and better.

HERE'S A SECOND-SAVER!



Fast and easy to use with just one hand, the Thor Electric Nibbler cuts its own clearance in plain or corrugated stock—without distortion. Saves time and spoiled material.

HERE'S A MANPOWER-MULTIPLIER!



Whether working on sheets, tubing or boxes . . . fabrication or installation . . . the sheet metal man with a Thor Portable Nibbler will finish more jobs . . . in shorter time because the tool is guided and handled with unusual ease.

HERE'S A PROFICIENCY-PROMOTER!



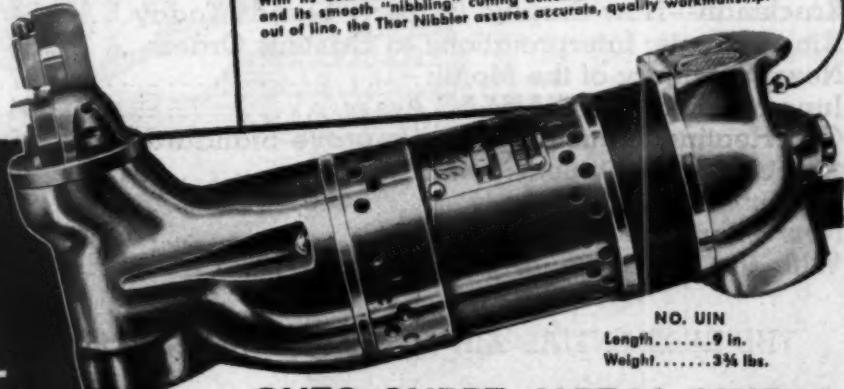
With its automatic rate of feed that prevents overloading and stalling and its smooth "nibbling" cutting action that won't distort stock or get out of line, the Thor Nibbler assures accurate, quality workmanship.

HERE'S THE

Thor

PORTABLE ELECTRIC

NIBBLER



NO. UIN

Length.....9 in.

Weight.....3½ lbs.

CUTS SHEET METAL LIKE A HOT KNIFE CUTS BUTTER

The Thor Portable Electric Nibbler cuts sheet metal and other materials up to 20 gauge at the rate of 9 to 10 feet a minute. It's perfectly balanced and compact . . . will cut inside curves and circles on as small a radius as 1 inch—tubing as small as 1½ inch diameter. In the shop or on the job, the Thor Nibbler is a practical time and labor saver for the busy contractor.

INDEPENDENT PNEUMATIC TOOL CO.
600 W. Jackson Blvd., Chicago 6, Ill.

New York

Los Angeles

For specifications and prices on Thor Electric Tools, write for Catalog No. 38.

OTHER THOR TIME-SAVER TOOLS

You'll save time and make more profits by speeding your jobs with these fast, powerful, Thor Portable Electric Tools.



Drills



Grinders



Hammers



Saws

Scrapdrivers Tappers
Nut Setters Sanders Polishers



Branches in Principal Cities

AMERICAN ARTISAN

Covering All Activities in Residential Air Conditioning and Small Commercial Cooling, Warm Air Heating, Sheet Metal Contracting and Fabricating

WITH WHICH ARE MERGED

FURNACES
SHEET METALS

AND

Warm-Air
Heating

J. D. Wilder, Editor

A. A. Kennedy, Assistant Editor

Vol. 114, No. 7

July, 1945

Founded 1880

CONTENTS

Our Help Is Needed to Save Fuel.....	55
The Fuel Conservation Program for 1945.....	56
Ten Services We Can Offer to Save Fuel.....	58
Kruckman—How Surplus Property Stands Today.....	64
Amendments, Interpretations to Existing Orders.....	66
News Summary of the Month.....	67
June Meeting of NWAH&AC Ass'n.....	94
Gas Heating Industries (L.A.) Improve Standards.....	95
Association Activities.....	96
Equipment Developments.....	98
New Literature.....	108
With the Manufacturers.....	114

THE RESIDENTIAL AIR CONDITIONING SECTION

NWAH&AC Ass'n Says—Want Competition?.....	71
Insulation Methods for Outdoor Piping.....	72
Essentials of Oil Burner Service (Limit Controls).....	74
Konzo—Successful Blower Operation.....	76
Effect of Radiant Heat on Fan Controls.....	80

THE SHEET METAL SECTION

Short Courses in Contract Termination.....	83
Fabrication of Main Engine Exhausts.....	84
Zideck—"Grain Movement" in Metal Forming.....	86
Sheet Metal Apprenticeship Training Program.....	90

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In This Issue

We did a fine job last summer putting heating plants in top operating condition so that our customers could save fuel. We did this in spite of severe manpower shortages, lack of material and equipment.

Now, once more, the government is asking us to help save fuel for next winter and we are told that in addition to the oil and gas which was scarce last winter, there is going to be millions of tons of coal less this year than we need.

We are willing to help. We will do everything possible—in spite of severe manpower shortages and only a promised increase in materials and equipment.

Under existing regulations, we can not save fuel by changing existing gravity furnaces to blower operation. Because of the scarcity of furnaces, we can't replace all the furnaces we know should be replaced. Because of shortages of materials—and regulations—we can't revamp existing systems for better heat delivery.

The job we are asked to do boils itself down to a few services we can offer which require a minimum of materials or equipment.

In this issue, beginning on page 56, we describe the need for fuel conservation and the government's program. From page 58 through page 63 we present graphically the ten services we can offer.

These ten services comprise simple adjustments and checks — furnace cleaning, adjustment of the fire for efficient combustion, setting of controls, checks on draft and house insulation, are typical.

Not much is needed in the way of materials—but each service requires manpower. Our problem, then, is to get our service orders booked right away, make a schedule of work so that each mechanic is busy all week long, and know each service thoroughly so that each service is performed in a minimum of time.

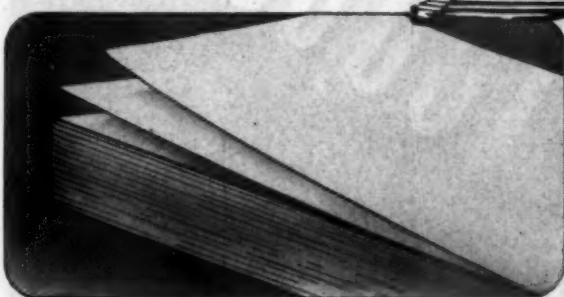
Quality Asbestos Products

Experience at Sal-Mo Division in development and manufacturing quality Asbestos Products places Sal-Mountain Company in a leading position for asbestos insulation, fireproofing, and waterproofing.



SAL-MO ASBESTOS AIRCELL PAPER

For insulating hot air pipes, gas ovens, range boilers and other surfaces exposed to heat. Protects surfaces from rust and corrosion.



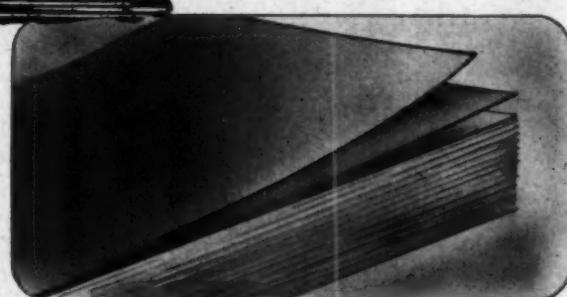
SAL-MO ASBESTOS MILLBOARD

Fire and vermin proof. Sal-Mo Asbestos Millboard is not affected by age or dampness. For insulating stoves, ovens, electrical and heating appliances, protecting walls from heating apparatus. Standard size sheets; also cut to size.



SAL-MO ASBESTOS PAPERS

Made in smooth, strong, white sheets from the best grades of selected asbestos fibre. Specially processed to insure efficient insulation. In all standard weights and widths.



SAL-MO No. 77 ASBESTOS DUCKBOARD

An Asbestos product for constructing ducts in warm air heating, ventilating and air conditioning systems. Made of solid asbestos. Light in weight; fireproof and moisture proof. Easily handled and applied. 33x48" sheets.

SALL MOUNTAIN COMPANY

176 W. ADAMS ST.

Phone: ANDover 2414

CHICAGO 3, ILL.

CHECK THE FACTS
AND
YOU'LL
FIND...

Year after year, Williams Oil-O-Matic dealers have had the lion's share of the oil heating business. *One hundred million dollars* worth of sales proves it!

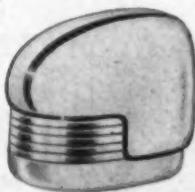
But that's not all. Such a record means that Oil-O-Matic heating equipment was right from the start . . . that it has constantly kept ahead of competition . . . that it has performed reliably, season after season. It means that it has been priced right and merchandised right . . . for over 25 years. It means that in every community there are satisfied owners who will keep on recommending Oil-O-Matic to prospective buyers.

With these advantages . . . plus still finer products and more powerful selling aids . . . Oil-O-Matic dealers are bound to get the biggest slice of the \$900,000,000 oil heating market predicted for the first five postwar years.



For continued excellence in producing tough-to-build war equipment, Williams employees have *four times* received the Army-Navy Award, as well as the USAAF "Approved Quality Control Rating."

When the word comes, Williams will be ready with new and finer Oil-O-Matics that reflect the knowledge and skill gained through more than 25 years of production for war and peace.



WILLIE O-MATIC says: "When you take your dollars out of the fight, you hurt both yourself and your country. So buy more War Bonds—and hold on to them!"



WILLIAMS OIL-O-MATIC DIVISION, Eureka Vacuum Cleaner Company, BLOOMINGTON, ILLINOIS

OWNERS

HAVE ALREADY
INVESTED
MORE THAN

\$100,000,000

IN OIL-O-MATIC
HEATING
EQUIPMENT

WILLIAMS
OIL-O-MATIC
HEATING

COPR. 1948, WILLIAMS OIL-O-MATIC
AMERICAN ARTISAN, July, 1948

COAL Gravity OIL Forced Air GAS

MODERN

SYNCHROMATIC

STEEL FURNACES

They'll call it
"TRADITION"—
40 years from now!

A Complete Deluxe line with unlimited merchandising features—all at no higher prices than old style run of the mill furnaces.

Make Certain of a Profitable Future—

Tie up with . . .
SYNCHROMATIC
Exclusively!



This Fine-Smooth Design!
This Highly Efficient Performance!
This Modern Compactness!
This Achievement in Simplicity!

LOOK TO SYNCROMATIC FOR DESIGNS OF TODAY

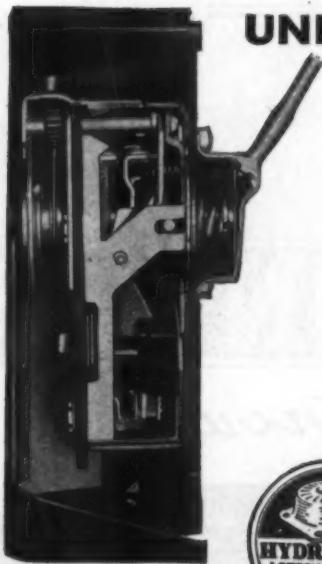
Write—We'll advise your jobber
to contact you with information

SYNCROMATIC CORPORATION
5110 NORTHEAST 11TH AVENUE, SE, SEATTLE, WASHINGTON

* HEAVIER, LONGER-WEARING PARTS

possible because of

UNLIMITED POWER OF HYDRAULIC-ACTION



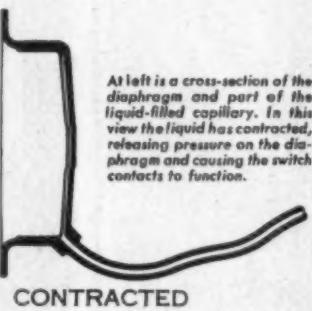
8 EXCLUSIVE FEATURES OF WHITE-RODGERS HYDRAULIC-ACTION TEMPERATURE CONTROLS

1. May be mounted at any angle or position, above, below or on level with control point.
2. Hydraulic-Action principle incorporating solid-liquid-filled bulb and capillary provides expansion force comparable to that of a metal bar.
3. Diaphragm motion uniform per degree of temperature change.
4. Power of solid-liquid charge permits unusually sturdy switch construction resulting in positive contact closure.
- ★ 5. Heavier, longer-wearing parts are possible because of unlimited power.
6. Dials are evenly and accurately calibrated over their entire range because of straight-line expansion.
7. Controls with remote bulb and capillary are not sensitive to change in room temperature. Accuracy of control is not affected by temperature changes in surrounding area.
8. Not affected by atmospheric pressure. Works accurately at sea level or in the stratosphere without compensation or adjustment.

With the terrific power of Hydraulic-Action to actuate the control, tough, strong, hard-driving parts can be built into White-Rodgers temperature controls.

That means a control with long life, free from trouble calls due to breakage or adjustment needs. Under even the hardest, roughest use, White-Rodgers Hydraulic-Action controls can take it and come back for more.

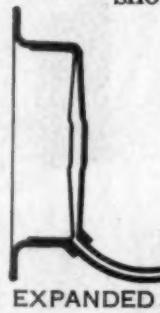
WHY HYDRAULIC-ACTION CONTROLS ARE LONGER-WEARING UNDER HARDEST USE



At left is a cross-section of the diaphragm and part of the liquid-filled capillary. In this view the liquid has contracted, releasing pressure on the diaphragm and causing the switch contacts to function.

CONTRACTED

The amazing expansive and contracting force of the Hydraulic-Action solid-liquid charge is responsible for its long-wearing dependability in service. How this works is shown in these illustrations.



In this cross-sectional view, the liquid charge of the capillary has expanded with a rise in temperature. The positive force of this hydraulic action forces the diaphragm outward and causes the switch contacts to function.

EXPANDED



Actual-size illustration of the White-Rodgers diaphragm body, the actuating element of every White-Rodgers temperature control. It is so designed as to exert full pressure at the point of contact with the switch mechanism.

WHITE-RODGERS ELECTRIC CO.

1215G CASS AVENUE

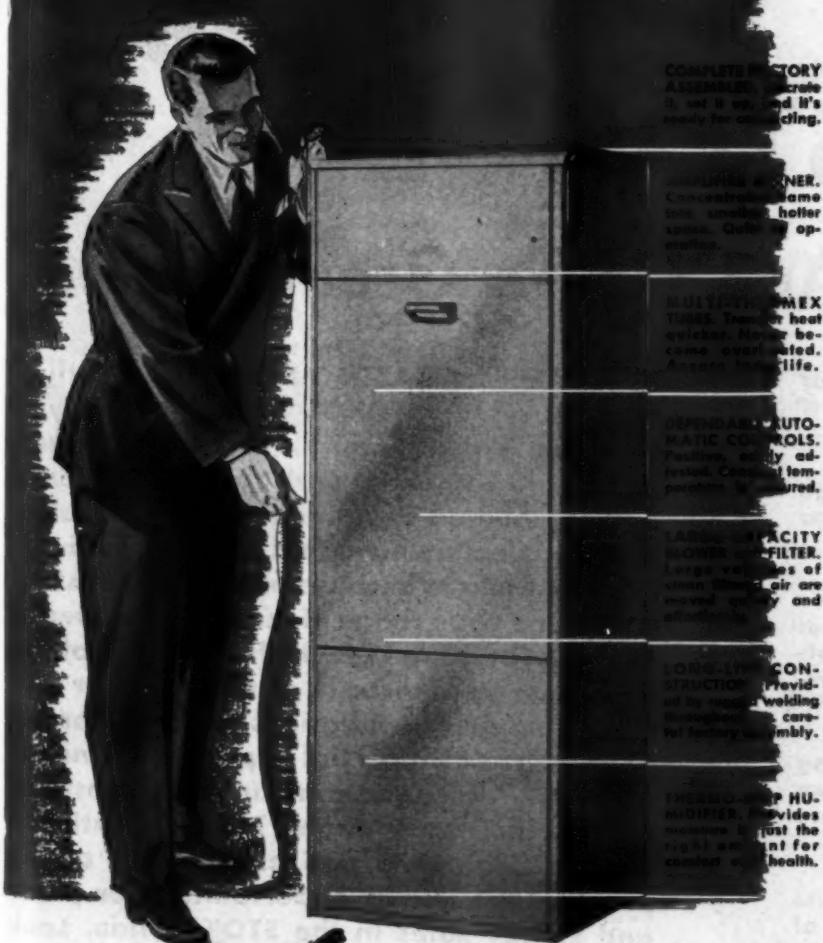
ST. LOUIS 6, MISSOURI

Controls for Refrigeration • Heating • Air-Conditioning



How to measure the heating values you specify...

**...it's not size
that counts!**



YOU can't measure a winter air conditioner's performance by the number of cubic feet it occupies. Research and engineering here at Surface Combustion have shown that the elimination of bulky combustion chambers and oversized burners results in quicker, more plentiful heat from smaller units than is possible with many conventionally designed larger models.

No, it isn't size that matters in measuring the values of a piece of heating equipment. It's the *inside* of a furnace—the design and construction that really count. Compact Janitrol Winter Air Conditioners enable the builder to place units in utility rooms . . . in the corner of a basement . . . even in a wall section of a living room . . . to make more space for living or other household services.

That's why, to make the best use of clean, comfortable gas heat, so many home builders and designers have specified Janitrol.

For no other gas-fired heating equipment provides the *combination* of advantages that Surface Combustion has engineered.

So, when you install a Janitrol Winter Air Conditioner, you're installing *less* furnace by weight and volume—but *more heating economy* and *long lasting liveability* than is possible with conventional designed units. Write today for information on the complete line of Janitrol equipment. Surface Combustion Corporation, Toledo 1, Ohio.

**GAS-FIRED
HEATING EQUIPMENT**

Winter Air Conditioner

Control Panel

Conversion Burner

Control Panel

Control Panel



STOKOL

Features That Add Up To Greater Sales

- TRANSMISSION—silent—choice of hydraulic or worm drive in most sizes—no shear pins.
- HOPPER—attractive, extra large—air-tight lid—knee-high—easy to fill—open hopper or bin-feed.
- RETORT—designed for proper coal distribution—heavy sectional tuyeres—non plugging—"metalized"—sprayed with molten aluminum—can't warp or crack.
- FEED SCREW—heavy cast alloy steel—heat-treated for maximum resistance—variable pitch for easy operation.
- COAL FEED—instant and infinite speed regulation within limits of model range.

YOU'LL BE AMAZED at the many selling features of STOKOL Stokers when you examine them. Beauty, convenience and safety are combined with rugged efficiency and engineered dependability. Many salesmen and dealers have told us they could sell STOKOL Stokers because of the transmission alone. The wide range of models with special features for all solid fuels, from lignite of the northwest to anthracite of the east—for bin-feed or hopper installations—and for domestic as well as commercial applications, makes everyone who uses a coal furnace a prospect. And, with more than 140,000 satisfied owners singing its praises, there is ample proof of the dealer opportunities for profit and steady sales in the STOKOL line. Look over the partial list of outstanding STOKOL features, then mail the coupon today. Stokol Stoker Company, Inc., Indianapolis 7, Ind.

STOKOL STOKER CO., INC.
1145 E. 22ND ST., INDIANAPOLIS 7, IND.

Gentlemen: Send details of Stokol profit possibilities for me as a dealer.

NAME _____

ADDRESS _____

CITY _____ STATE _____

Tear Out This Coupon and Mail Today

"Automatic"



it's not a
new word!

... but Mrs. Housewife is fast learning that its meaning, "done without conscious effort" can be applied to running a household — and she loves it! Not the least of her post-war demands is going to be that grand and glorious freedom of Automatic Heating. AND ... Rudy will be ready with a complete line of new streamlined Automatic coal, gas and oil fired units with the kind of performance that will make each buyer a booster to build your sales.

The Rudy Franchise means bigger sales and more profits — write for full details today.



FURNACE COMPANY · DOWAGIAC, MICH.



EVEN FINER **RUDY** PRODUCTS FOR THE WORLD OF TOMORROW

LOOK, BROTHER!

*My family's gonna be comfortable-
from now on!*



WARM in Winter . . . COOL in Summer

This positive fellow means business. His statement is a true indication of the tremendous welled-up consumer demand for automatic heating, cooling and year 'round air conditioning, from a single wall thermostat.

Progressive contracting dealers are planning to take a firm grasp of this new opportunity — to expand — to increase their profits. Linked with VIKING, they will offer extra value to their customers. They will have the aggressive support of a strong locally owned distributor, who carries in addition to the complete VIKING line, a convenient inventory of every item needed for a completely installed job — pipe, fittings, valve, register parts, etc. The VIKING distributor assists in engineering the job, regulates the flow of material and offers suit-

able credit facilities, saving the dealer's full time and effort for *application, installation and service.*

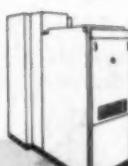
Time to Get The Facts

With the complete VIKING line you will offer equipment for every type of installation — for every type of fuel. Furnaces, boilers, stokers, summer cooling units, floor furnaces, space heaters, water heaters and commercial refrigeration units. Everything for complete winter and summer comfort.

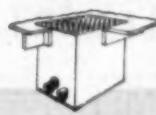
Your VIKING distributor is a valuable business friend. He can, and will do a lot for you. Don't delay writing for his name and full details of the VIKING line and VIKING's special Merchandising Plan which is designed to help you make more money. Write today.

VIKING MFG. CORPORATION

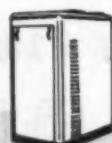
1601 U. B. BLDG., DAYTON 2, OHIO



Year-round Air
Conditioners



Floor
Furnaces



Furnaces



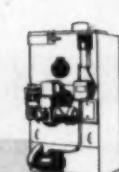
Space
Heaters



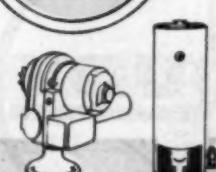
Boilers



Room
Coolers



Utility Room
Furnaces



Conversion
Burners



Water
Heaters



Gravity and Forced Air FURNACES

COMPLETE HEATING SATISFACTION
FOR EVERY TYPE OF BUILDING

CERTIFIED R-G

A heavy rugged steel constructed warm air furnace that will give years of economical service and heating satisfaction. All electric arc welded. Write for Bulletin 330C.

COUNTERFLOW

A complete air-conditioning unit in a rectangular steel casing with heat saver, blower, motor and filters all combined into one attractive unit. Write for Bulletin 293C.

MAMMOTH

These sturdy electric arc welded all steel furnaces are specially designed for heating larger areas and are adaptable to all types of fuels. Write for Bulletin 216C.

NATIONAL

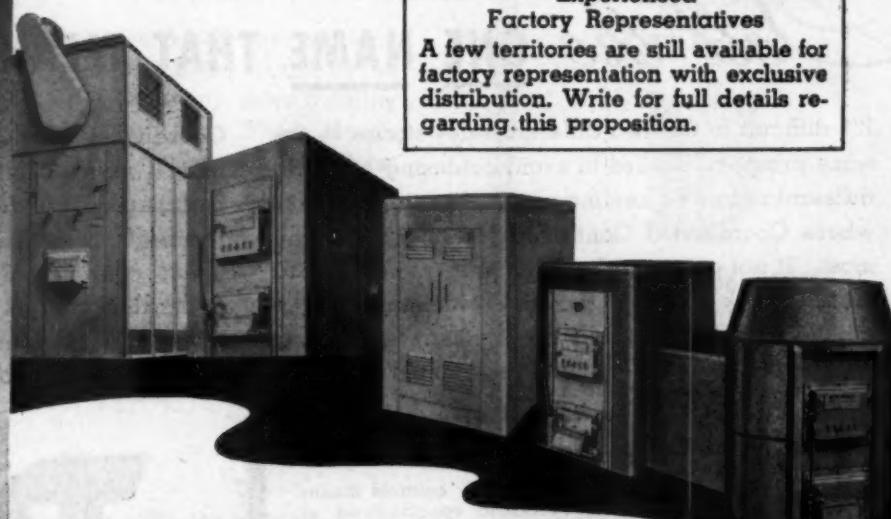
These large all steel furnaces are equipped with high velocity directional air projection and are ideally suited for heating large volumes of air. Write for Bulletin 181C.

This complete line of heating equipment is especially suitable to dealers who desire full representation in the heating field. Certified heating equipment is a well established and highly recognized line of gravity and air conditioning units. These are manufactured in a full selection of sizes adaptable to every heating requirement. Here is a profitable, year around line of equipment that offers complete heating service in a competitive price field. Several new postwar items have been developed and are being added to the line as soon as availability of labor and materials permits.

Now is the time to investigate the advantages that are offered to dealers through a complete line under the Certified name. See your jobber, now, or write us direct for full details regarding the advantages in representing the Certified complete line of heating equipment.

Experienced Factory Representatives

A few territories are still available for factory representation with exclusive distribution. Write for full details regarding this proposition.



THE
Complete

LINE OF HEATING EQUIPMENT

CERTIFIED FURNACE CO.

DIVISION OF STAINLESS & STEEL PRODUCTS CO.

1000 BERRY AVE.

ST. PAUL 4. MINN.

Fuel-Saving
Starts With
CONTROL



Sell the ONE NAME THAT MEANS MOST TO YOU

It's difficult to tell two different sales stories to the same prospect — hard to avoid confusing him with different names for heating unit and controls. That's where Coordinated Controlled Heating helps you most. It not only coordinates controls and heating unit to work together for peak efficiency — but greatly simplifies selling by concentrating your entire sales story on a single trade name.

Coordinated Controlled Heating brings you the logical development in heating sales — controls merchandised under your heating equipment manufacturer's trade name. Now everything you say about controls in your sales presentation helps rather than hinders your sales of heating equipment. Now you sell the one name that means most to you — the one in which you have your big investment.



Primary Controls

Typical of many primary controls manufactured by Perflex to specifications of leading producers of automatic heating equipment is the oil burner primary control. Its thermal element is an outstanding feature providing rapid, wide-range temperature response with smooth uniform action and long life. Available in both constant and intermittent ignition models and in designs for low and line voltage applications.

Ask Your Manufacturer for Details on the Features of Perflex Primary Controls used in Coordinated Controlled Heating.

MANUFACTURERS OF AUTOMATIC CONTROLS BEARING THE TRADE-MARK NAMES OF LEADING PRODUCERS OF AUTOMATIC HEATING SYSTEMS

Perflex
CORPORATION

500 W. OKLAHOMA AVE.

MILWAUKEE 7, WISCONSIN



AMERI

Here's 5-Way Teamwork

**—to help you hit the top
in oil heating sales**

Do you want leadership in oil heating sales? Then consider the completeness of the Fluid Heat line . . . plus the 5-way teamwork you get as a Fluid Heat Dealer:

- 1** You'll have behind you a company which has built its oil heating business by helping dealers build theirs. Fluid Heat believes in working with dealers as partners in a cooperative, progress-minded effort.
- 2** You'll have the assistance of an active Field Force . . . of experienced Fluid Heat men who can help you on any problem of oil heating installation, operation, service or sales.
- 3** You'll have real consumer acceptance . . . a trade-mark with a reputation that dates from the beginning of the oil heating industry . . . backed by a nationally known manufacturer whose products have given satisfaction to home owners for more than half a century.
- 4** You'll sell equipment that is soundly designed and ruggedly built . . . to reduce service problems to a minimum and build sales through customer satisfaction. Many Fluid Heat Burners are still on the job after 17 to 20 years of use.
- 5** To keep you out in front product-wise, you'll have working for you one of the largest Development Laboratories in the industry . . . from which have come many sales-building Fluid Heat features. More will come from Fluid Heat's successful development of efficient combustion and heat transfer equipment for the Armed Forces.

Fluid Heat is ready to work with you . . . so you'll be all set to profit by the huge postwar market for oil heat. Check the completeness of the Fluid Heat line at the right. Then get complete facts about a Fluid Heat Franchise. No cost. No obligation. Write today to: Fluid Heat Division, Anchor Post Fence Co., 6720 Eastern Ave., Baltimore 24, Maryland.



"World's Economy Champion"

A PRODUCT OF THE ANCHOR POST FENCE COMPANY,
BALTIMORE, MD., ESTABLISHED 1892



4 Pressure Burners
Firing rates from
7/10 to 12
gallons per hour



6 Vertical Rotary Burners
Firing rates from
7/10 to 6
gallons per hour



8 Air Conditioning Furnaces
From **70,000 to**
200,000
BTU per hour



7 Boiler Burner Units
Capacities from **475**
to 840 sq. ft. of
standing hot water



40 Gal. Hot Water Heater
Sells on appearance
—delights users
by performance

HAVE YOU TRIED ILG

FLOATED DRIVE?



Simple, compact arrangement of ILG direct-connected motor and wheel unit with "Floated Drive".



Motor and Wheel "ride in rubber" for effective, low-cost sound isolation!

Extremely quiet operation is yours with ILG patented "floated drive"! This tried and proved ILG development eliminates metal-to-metal contact, isolates sound and vibration *at point of origin*, prevents noise amplification by fan housing. Four point vertical floating of the weight takes advantage of all three loading factors—compression, tension and shear—providing utmost dampening effect. Motor and wheel are isolated as a single unit. Unbalanced cushioning is impossible. Cost is

low—installation is quick and simple—results are highly satisfactory. Can be mounted at any time on Centrifugal Fans. Write us or call nearby Branch Office (consult classified directory) for complete information.



VITALIZED VENTILATION

AND AIR CONDITIONING

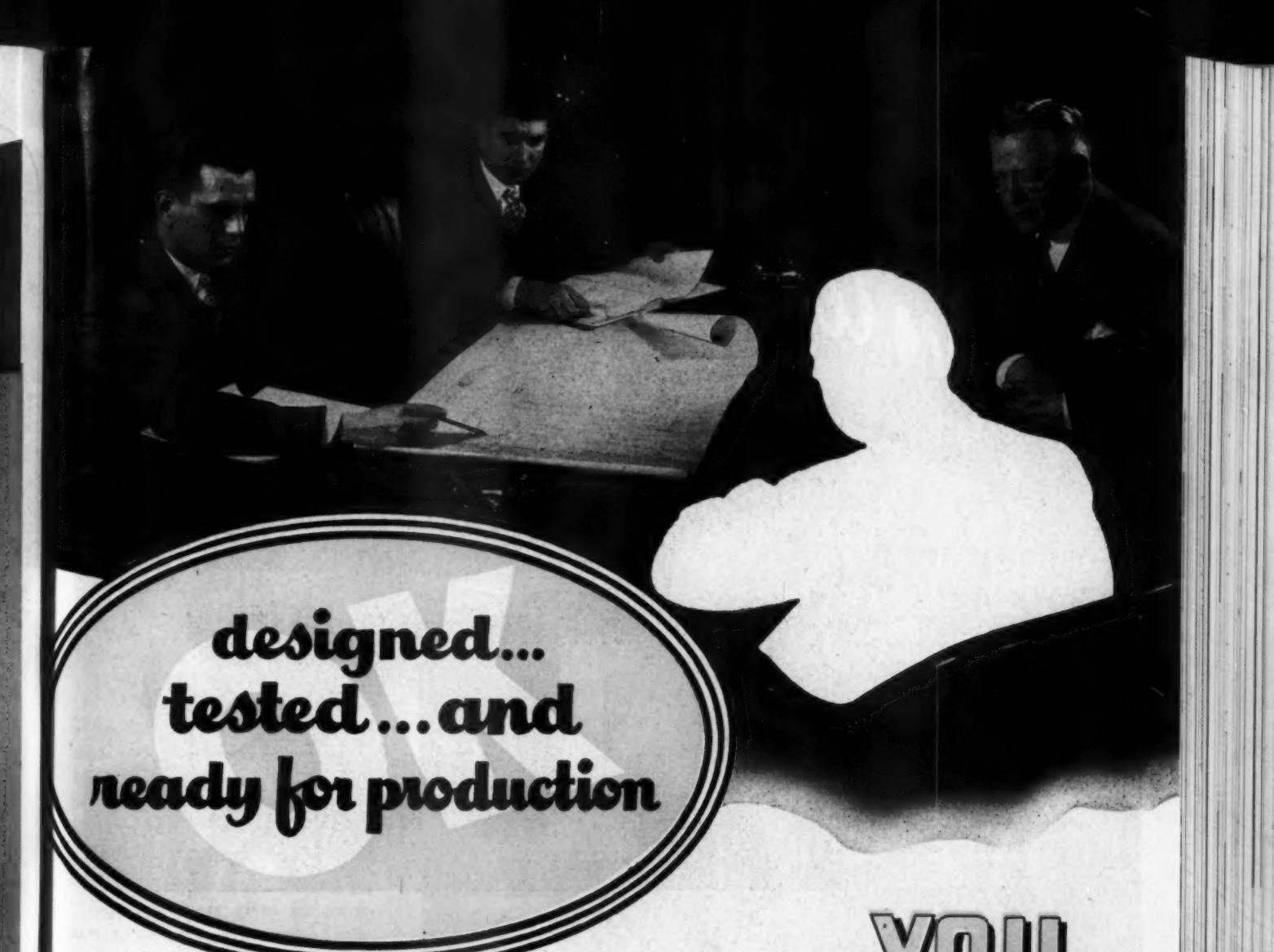
FREE!
88-page book
on solutions to
ventilating
problems.



WANTED: GRADUATE ENGINEERS

for ILG Branch Offices, Research, Engineering Depts. Exceptional opportunities now and post-war for graduates of accredited technical schools. Send details on education, experience, health, age, marital status.

ILG ELECTRIC VENTILATING CO., 2871 N. Crawford Avenue, Chicago 41, Ill.
Offices in 40 Principal Cities



**designed...
tested...and
ready for production**

..now we're set to talk sales with YOU

**HERE'S THE HEIL
POSTWAR PROGRAM**

- 1** Smart styling, sound engineering, dependable performance.
- 2** Complete line of conversion oil burners, boiler-burner and furnace-burner units.
- 3** New designs feature accessibility for simplified service and maintenance.
- 4** Uniformity of design and construction throughout entire line.
- 5** Attractive price structure assuring generous profit.
- 6** Advertising and merchandising aids designed to make selling easier.

■ You've known for a long time what your customers want in postwar oil heating designs—and the type of product you need for more profitable sales.

Now in the new Heil line you'll find the features you have been looking for. New in every detail, smartly styled and soundly engineered in the Heil tradition, this new line is tested and ready for production when war restrictions are lifted. Here are types and sizes for every domestic heating requirement—at prices that appeal to any pocketbook.

But that's not all. To acquaint your customers thoroughly with the advantages of Heil oil heating equipment—to assist you in making more postwar sales and profits—we have prepared a powerful advertising and sales promotion campaign that features tested merchandising ideas and sales aids.

WRITE NOW FOR DEALER FRANCHISE INFORMATION

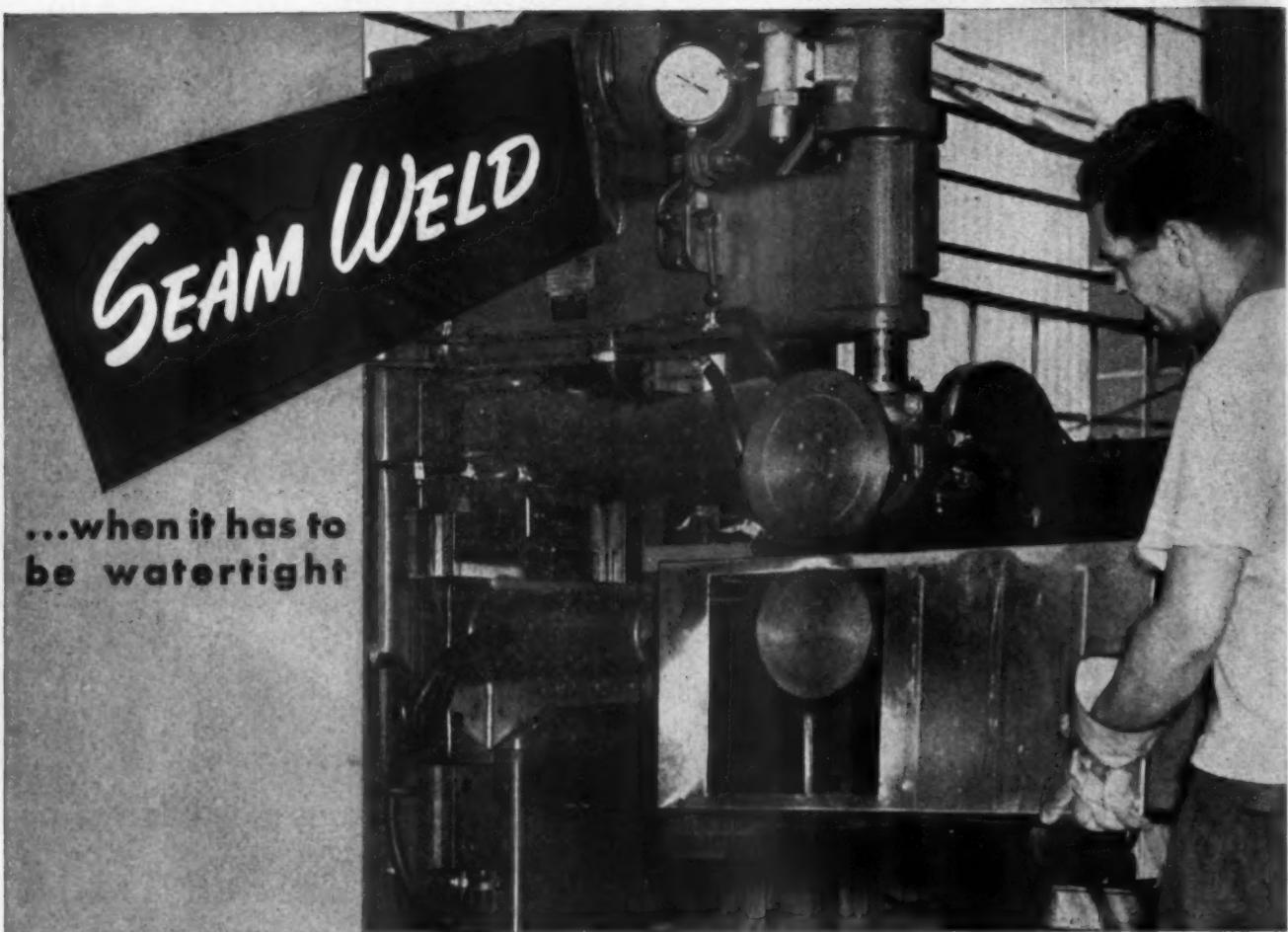
Seeing is believing. You are invited to look over our designs and merchandising plans now. A letter will bring you the complete Heil story so you can convince yourself that a Heil franchise means more postwar profits for you.



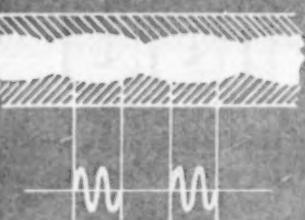
THE HEIL CO.

DEPARTMENT A-1, MILWAUKEE, WISCONSIN

Manufacturers of Quality Automatic Heating Equipment Since 1924



**...when it has to
be watertight**



Schematic cross section diagram of a seam weld. Interrupted current is generally used and produces a succession of overlapping spot welds. Electronic timers control the sequence of a typical setting: 2 cycles weld time and 2 cycles off time. Current values slightly higher than used for single spots are required due to the shunting of the adjacent weld.

FAST Higgins landing craft must use distilled water in the cooling of their power plants. It is essential that the distillation unit be both sturdy and splash-proof.

In fabricating this unit, Higgins Industries, Inc. uses *seam welding*. The Sciaky welder above is speeding the production of distiller cabinets. A single sheet of 24 gauge Monel metal is formed, then welded with a single longitudinal lap joint near the corner. The result is a strong, waterproof joint, produced with speeds up to 78" per minute. No special skill is required of the operator.

We can help you design your product to take advantage of this modern fabricating process. A variety of special wheels, mandrels and jigs can be adapted to your problem. A new booklet describing our 180 KVA series machines, including general information and tooling data is yours for the asking. Write for bulletin 113-A.

SCIAKY BROS., 4915 W. 67th ST., CHICAGO 38, ILL.

Offices in New York, Washington, Cleveland, Detroit, Los Angeles
Representatives in principal cities. Plants in London and Paris

ELECTRIC RESISTANCE WELDING EQUIPMENT

SCI AKY

COMBUSTIONEER REVEALS ITS COMPLETE STOKER LINEUP!



Wide Range of Models Dominates the Entire Home and Commercial Markets for Automatic Heat!

The stoker with features pronounced *most* saleable is here. Illustrated are typical sizes of it for every home and business need. Each Combustioneer is backed by advertising and sales-promotion help that make its patented, *exclusive* features desirable.

Combustioneer gives its owners new, remarkable economy and efficiency of heating. Instead of merely "grinding" the coal into fuel bed, Combustioneer feeds by gentle "impulses." These keep fire-bed "loose"—non-packed! Then, the air that Combustioneer's Automatic Respirator measures and meters can reach *every* burning particle! This pulsating, "breathing" fuel-bed creates combustion which gives *much* more heat from *every ounce* of coal!

SELL COMBUSTIONEERS NOW! —OTHER DEALERS ARE

With the resumption of near normal production, the chances are that you can get deliveries on the *immediately available* models which you will need to *cash in this year* with Combustioneer. Write or wire today for complete details.

Cash in **THIS YEAR** with

[KEEP ON BUYING
WAR BONDS]

UTILITY MODEL COMBUSTIONEER

For Small Homes of from 4 to 6 Rooms

Truly the biggest bargain in home-heating comfort ever offered for small homes—at an exceptionally low price. Includes the "Breathing" Fuel-bed and many other exclusive Combustioneer features.



BIN FEED MODEL COMBUSTIONEER

Feeds Coal from Bin to Fuel Bed
and Brings Complete Automatic
Heat to Homes and Apartments of
from 5 to 14 Rooms

This deluxe Combustioneer works and thinks 24 hours a day at the job of furnace-tending. Out of sight and out of mind, the fuel travels direct from bin to furnace to be burned the completely Automatic Combustioneer Way.

IMPERIAL MODEL COMBUSTIONEER

Comes in Sizes to Efficiently
Serve Homes from 5 to 14 Rooms,
and Small Apartments

The eye-appealing beauty of the Imperial Model Combustioneer conceals all of the advantages and features which make it a precision-built marvel of heating efficiency.



COMMERCIAL MODEL COMBUSTIONEER

One of a Line Which Ranges in
Capacity from 25 to 1250 Lbs.
Per Hour

A complete Automatic Coal Burning System, in both Hopper and Bin Feed models—with "Breathing" Fuel Bed and unique automatic air regulation. Drastically reduces labor and fuel costs.

Combustioneer
AUTOMATIC COAL STOKER

THE STEEL PRODUCTS ENGINEERING CO.
1221 W. Columbia Street, Springfield, Ohio



Help Save Fuel This WINTER ... Build Business For The FUTURE

• In your summer service calls, visit the owners of hand-fired heating plants. Show them how to save fuel with PENN Draftender Controls. You'll be boosting the government's fuel-saving drive . . . and at the same time *uncovering prospects for fully automatic heating in the future.*

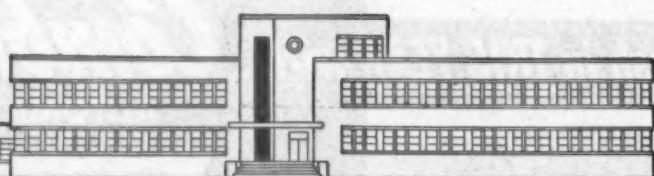
By selling these homeowners Draftender Controls you'll help them conserve fuel . . . as these devices eliminate the waste of overheating, so common with hand-controlled dampers. And once acquainted with the *comfort* and *convenience* of thermostatic control, these buyers will be eager to reap the full benefits of a completely automatic heating system.

PENN Draftender Control sets include Tem-

trol—the heat-anticipating thermostat—damper motor and limit switch. Thus, your prospect will already have acquired some of the necessary controls for full conversion. PENN Draftender Controls are easily installed on *any* hand-fired system . . . and are now available *without consumer priorities.*

Remember, you gain three ways when you sell Draftender: 1) Immediate profits. 2) Future business. 3) You tie-in with the government's fuel-saving program. So order Draftender Control sets from your local wholesaler now. Or if you want more information, write *Penn Electric Switch Co., Goshen, Ind.* Export Division: 13 East 40th Street, New York 16, U.S.A. In Canada: Powerlite Devices, Ltd., Toronto, Ont.

PENN



AUTOMATIC CONTROLS

FOR HEATING, REFRIGERATION, AIR CONDITIONING, ENGINES, PUMPS AND AIR COMPRESSORS



The Mueller Climatrol System assures you of a competitive advantage *...because it makes you a "comfort merchant"*

When you concentrate on selling Climatrol, you know that you are offering equipment which is up to the standards of today and tomorrow. Up to the standards of today — because Mueller has long been a leader in the improvement of warm air heating toward the goal of true indoor comfort. Up to the standards of tomorrow — because the Climatrol System is basically designed to handle and condition *air*, and every one of the major "Comfort Factors" is dependent upon conditioning of air. Therefore, as engineering

makes further advances, features can be added to provide additional "Comfort Factors." . . . Mueller's 88 years of progress is your assurance of satisfied customers. The complete Mueller line enables you to offer furnaces and winter air conditioners especially designed for the chosen fuel — gas, oil, or coal — for old or new homes of every size, type, and price range. Become a Mueller "comfort merchant." Write for bulletins. *L. J. Mueller Furnace Co., 2010 W. Oklahoma Avenue, Milwaukee 7, Wisconsin.*

D-51

Climatrol

REG. U.S. PAT. OFF.



Want to simplify y

We believe your answer will be "yes".

That's why we want to call your attention to Herman Nelson's winning combination—a line of quality heating and ventilating products, plus a nation-wide distributor organization ready with valuable assistance in the correct application of these products in every type of industrial, commercial and public building.

Herman Nelson unit heaters, unit ventilators, propeller fans, centrifugal fans and unit blowers have been designed and constructed for maximum operating efficiency and economy by a firm recognized as a leader in the heating and ventilating industry for the past 38 years.

The Herman Nelson Distributor nearest you has a trained organization, ready to provide practical as well as technical information in the selection of the exact type and size of equipment best suited for each job. Thoroughly familiar with Herman Nelson Products and their application, the Distributor will help you hold costs down to a minimum while your customers will obtain the superior results they have a right to expect from this quality heating and ventilating equipment.



Herman Nelson
Direct Drive
Propeller Fans

Herman Nelson
Belt Drive
Propeller Fans



Herman Nelson Hor-
izontal Shaft Propel-
ler-Fan Type Unit Heaters



Herman Nelson
Type H
Centrifugal Fans



Herman Nelson Ver-
tical Shaft Propel-
ler-Fan Type Unit Heaters

Herman Nelson
Type HB
Centrifugal Fans



your heating and ventilating jobs?

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Duluth, Minn.—Williams-Swanson Co.
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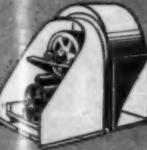


THE HERMAN NELSON CORPORATION

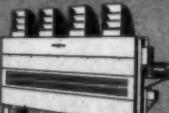
Manufacturers of Quality Heating and Ventilating Products

GENERAL OFFICES: MOLINE, ILLINOIS • FACTORIES AT MOLINE, EAST MOLINE AND CHICAGO, ILLINOIS

Herman Nelson
Direct Drive
Unit Blowers



Herman Nelson
Belt Drive
Unit Blowers



Herman Nelson
Blower-Fan Type
Unit Heaters



Herman Nelson
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Unit Ventilators

'THE MARK

OF FIRST CLASS SHEETS

YOU'RE looking at the best known trade-mark in the steel industry.

Steel sheets that carry this familiar U-S-S Symbol are made to meet the exacting requirements of sheet metal workers. Being uniform in surface, in flatness, in durability and in forming qualities, these superior sheets bend, roll, cut, shear, weld and machine exceptionally well . . . advantages that simplify shop practices and put you in better position to handle a bigger share of peacetime business.

Continuous Advertising Has Created Customers for You

America's most widely advertised symbol of quality steel has never stopped working for you. Through consistent advertising in 150 magazines it has gone right on selling the idea of better steel to your future customers—building up an acceptance for U-S-S Sheet Steel that will go far to help you establish your reputation as a dependable metal worker in the busy months ahead.

You will find the U-S-S Label on a complete line of steel sheets. Check your needs against the column at the right. And, remember: If you work with sheets, it will pay you to work with the *best known* sheets—those marked U-S-S.



GET THIS HANDBOOK... IT'S FREE

The *Sheet Metal Worker's Guide* points out helpful shop practices, tells how to estimate costs on sheet metal jobs, how to select the right U-S-S Steel Sheet for each job. Sixty-three pages of practical information. No obligation. A card will bring your copy.

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CARNEGIE-ILLINOIS STEEL CORPORATION, Pittsburgh and Chicago
COLUMBIA STEEL COMPANY, San Francisco
TENNESSEE COAL, IRON & RAILROAD COMPANY, Birmingham
United States Steel Supply Company, Chicago, Warehouse Distributors
United States Steel Export Company, New York

U-S-S STEELS FOR SUCCESSFUL SHEET METAL WORKMANSHIP

U-S-S GALVANIZED STEEL for sheet metal structures requiring the added protection of a zinc coating.

U-S-S COPPER STEEL to give twice the atmospheric corrosion resistance of regular steel at little additional cost.

U-S-S DUL-KOTE—A dull-surfaced galvanized sheet and U-S-S PAINTBOND—a bonded, galvanized sheet, both specially prepared for immediate painting and better paint adherence.

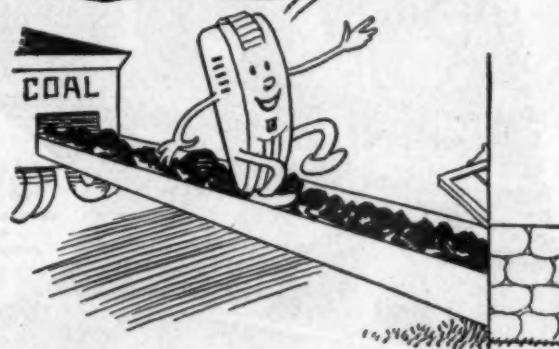
U-S-S HOT-ROLLED AND COLD-ROLLED STEEL to provide the basic advantages of steel, plus maximum economy, in accordance with the needs of each individual job.

U-S-S STAINLESS AND HEAT-RESISTING STEELS to assure high resistance to corrosion and heat, and to reduce weight.

U-S-S VITRENAMEL — Sheets designed especially for porcelain enameling.

U-S-S LOW-ALLOY, HIGH-STRENGTH STEELS to resist corrosion and increase strength-weight ratio.

ADD ME TO YOUR
CONSUMER'S COAL
ALLOTMENTS!



*The lid's
off*

FOR **CRISE** CONTROLS

We Can Deliver All You Can Sell!

Customer needs are urgent—the supply's great—
It's your big chance to make a killing.

Put a Crise Control on your customer's hand-fired furnace whether it's steam, hot water or warm air—make his 80%-of-normal coal supply give him all-winter comfort.

ADD IT UP

On any hand-fired furnace, Crise Heat Control saves up to $1\frac{1}{2}$ tons each winter — 20% of the average home's heating requirement.

80% + 20% = 100%
Coal Allotment Crise Saving All-Winter Comfort

MORE MONEY FOR YOU

Because Crise Control can be installed quickly, simply, you can handle more jobs in less time — keep more customers happy. And the Crise Control is priced to give you an attractive profit.

See Your Crise Jobber At Once



RECONVERT FASTER with Time-Saving SKILTOOLS!



SKIDLILLS

A size and type for all drilling up to $\frac{3}{8}$ inch in steel and 2 inches in hard wood. Exceptionally compact and powerful.



SKILSAWS

A size and type for all cuts in wood up to $4\frac{1}{2}$ inches deep, and for many cuts in metal, compositions and all masonry products.

The same SKILTOOLS that have helped American industry break all war-time production records will save time, money and manpower on your change-over work . . . because these tools do a better job faster and easier wherever there's drilling, sawing, sanding or grinding to be done. Whether you are rebuilding just a few machines or completely remodeling your plant, you can carry out your plans with greater speed and economy with the help of SKILTOOLS. Your SKITOOL Distributor is well qualified to advise you on the sizes and types of tools you will need. Phone him today!

SKILSAW, INC.

5033-43 Elston Avenue, Chicago 30, Illinois
Factory Branches in All Principal Cities



PORTABLE ELECTRIC SKILTOOLS

MADE BY SKILSAW, INC.

SKILSAWS

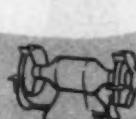


SKILSANDERS

SKILSHEAR

SKILNIBBLER

SKIDLILLS



SKILGRINDERS

**FOR EVERY JOB
THE RIGHT
SHEET**

Nothing lends a hand to help you turn out good work like the *right* galvanized sheet. The *right* sheet has good workability. That's why Continental sheets are uniformly tempered for good forming qualities . . . why they have an unusual ability to withstand forming operations without flaking or peeling of the coating.

But Continental sheets are *right* in more than workability. They are *right* to help you put extra value into every job. CHECKERCOAT sheets add distinctive appearance. COPPERIOR sheets are made of highly rust resistant copper steel to assure long life. SUPERIOR GALVANIZED sheets are special quality—an aid to good workmanship. Ask your jobber about these well-known sheets produced by Continental Steel Corporation and The Superior Sheet Steel Company.



**CONTINENTAL
STEEL CORPORATION**

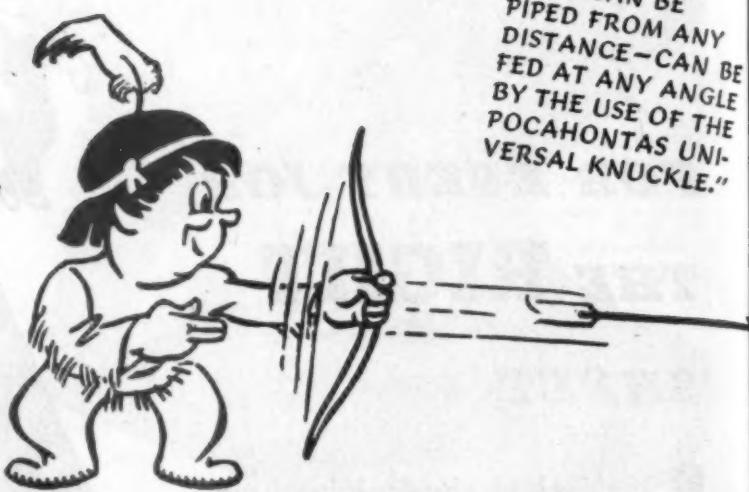
GENERAL OFFICES • KOKOMO, INDIANA
THE SUPERIOR SHEET STEEL COMPANY • CANTON, OHIO — A SUBSIDIARY

PRODUCERS OF STEEL SHEETS, including
SUPERIOR Galvanized, COPPERIOR (copper-steel
base) Galvanized, SUPERIOR Galvannealed,

CHECKERCOAT Galvanized, Hot Rolled Annealed,
Hot Rolled Pickled, Long Terne, and
many styles of Galvanized Formed Roofing.

ALSO, Manufacturer's Wire in many sizes,
shapes, tempers and finishes, Continental Chain
Link Fence, Nails, and other steel products.

IT'S BIG NEWS!



POCAHONTAS

THE FIRST SUCCESSFUL BITUMINOUS
BIN-FEED ASH REMOVAL STOKER

BECAUSE: Here's the first successful completely automatic bituminous coal stoker . . . and it burns low cost screenings just as well as regular stoker coal (thousands already in use)



If you are in the heating business, your experience will coincide with ours in the discovery that what the public wants is completely automatic *bin-feed, ash removal* equipment for bituminous coal. You and we have a big stake in this future market. As the world's largest producers of smokeless fuel, we have spent many thousands of dollars in the development and perfection of the Pocahontas Automatic Domestic Stoker. Today thousands of these are in operation in homes everywhere. We are convinced by the success of this equipment and the rising universal interest in ash removal stokers, that our convictions were right. We would like, therefore, to send you full information on this remarkable stoker. Feel free to write us. There is still good territory open. We are making only a limited number of stokers, but regardless of this, now is the time to investigate.

POCAHONTAS FUEL COMPANY INCORPORATED, 338 E. 131st St., Cleveland 8, Ohio

CONTROLS
Minneapolis-Honeywell, with specially designed super-sensitive fire-banking control, which operates directly by the temperature of the fire.



DOUBLE OVERLOAD PROTECTION
In addition to the mechanical shear pin there is a special electric overload device built into each motor for added protection.



TYPE FOR EVERY FURNACE
Can easily be installed in steam, hot water, or warm air furnaces. Several sizes to choose from.

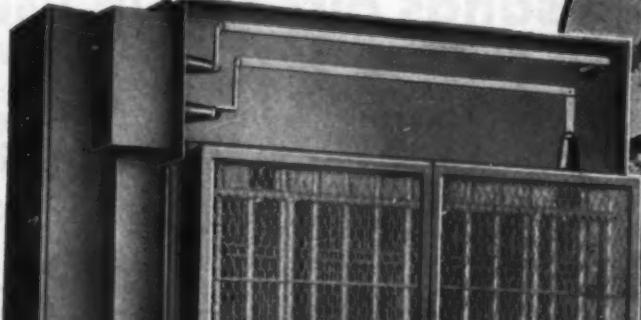


POCAHONTAS

THE FIRST SUCCESSFUL BITUMINOUS
BIN-FEED ASH REMOVAL STOKER

Smoky

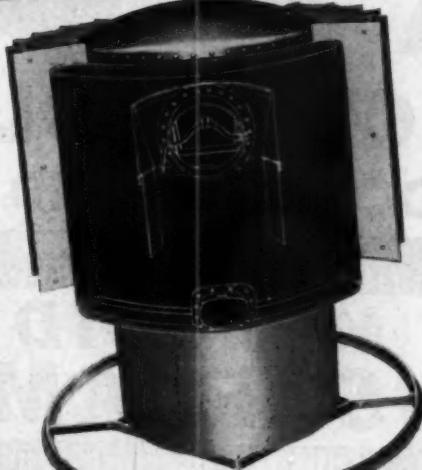
HAS TO BE MAGNIFIED 40,000
TIMES TO LOOK LIKE THIS:



IF you are in the heating business, your experience will coincide with ours in the discovery that what the public wants is completely automatic *bin-feed, ash removal* equipment for bituminous coal. You and we have a big stake in this future market. As the world's largest producers of smokeless fuel, we have spent many thousands of dollars in the development and perfection of the Pocahontas Automatic Domestic Stoker. Today thousands of these are in operation in homes everywhere. We are convinced by the success of this equipment and the rising universal interest in ash removal stokers, that our convictions were right. We would like, therefore, to send you full information on this remarkable stoker. Feel free to write us. There is still good territory open. We are making only a limited number of stokers, but regardless of this, now is the time to investigate.

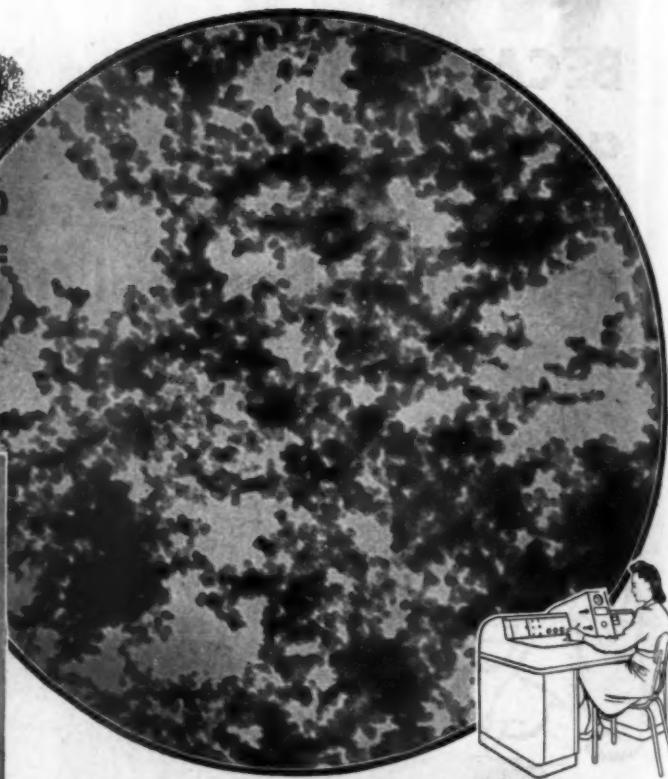
POCAHONTAS FUEL COMPANY INCORPORATED, 338 E. 131st St., Cleveland 8, Ohio

what about
VICTOR
HEAT RADIATING
FINS?



Smoke

HAS TO BE MAGNIFIED 40,000
TIMES TO LOOK LIKE THIS:



. . . YET SMOKE AND OTHER FRAC-
TIONAL MICRON-SIZE PARTICLES ARE
REMOVED BY THE ELECTRO-MATIC
WHICH PROVIDES SUPER-CLEAN AIR

Only the new electronic microscopes, will show all the particles of dust that the Electro-Matic Air Filter will remove. By first giving dust particles an electrostatic charge, then attracting them electrically to viscous surfaces, the Electro-Matic makes possible a degree of cleanliness in plant atmospheres that is unapproachable by other means. In addition, this equipment is rugged, automatic and self-cleaning (an exclusive AAF development) assuring continuous operation at peak efficiency.

Super-clean air for commercial and industrial concerns is guaranteed by the Electro-Matic

The use of filtered air to protect the health and comfort of employees is not just altruistic but a sound business investment. A large industrial insurance company estimates the time lost by employees due to colds and other dust borne respiratory reasons is costing business millions of dollars each year. This does not take into consideration the indirect losses resulting from production slow down, costly mistakes and the unavoidable waste due to inexperienced operators replacing absent key workers. Nearly every type of industrial plant and commercial concern is represented among the users of AAF equipment. For complete information on the Electro-Matic Air Filter send for Bulletin 250-D.

AMERICAN AIR FILTER COMPANY, INC.
Incorporated LOUISVILLE 8, KY.

355 Central Avenue

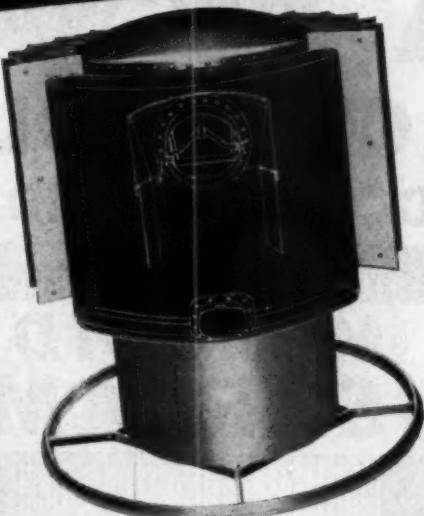
In Canada: Darling Brothers, Ltd., Montreal, P. Q.



ELECTRO-MATIC

THE SELF CLEANING
ELECTRONIC AIR FILTER

what about
VICTOR
 HEAT RADIATING
FINS?



More Hot Metal Heats More Air

AIR, to be heated, must rub on a HOT surface! The more hot surface there is to rub on, the warmer the air becomes. Cities are hotter than the country in summer because the air rubs on more hot surfaces. The sun does not directly heat the air. **More hot metal heats more air.** The extra, hot FIN metal in a 24" Victor would measure 2½ ft. by 23 feet long.

The EXTRA Victor Heating Surface

At the left is shown the average heating surface in the conventional type, cast iron and steel furnaces as compared with the Victor steel furnaces with its additional FIN heating surfaces. Air, moving upward as it heats, rubs on the extra, hot FIN surfaces and, heating more quickly, rises faster.

More Heat — from LESS FUEL

This all means more heat . . . for less fuel. A sure fire sale-clincher added to the many other superior features of the VICTOR. For over 50 years Victor furnaces have pioneered heating satisfaction. Sell Victor, the furnace with Heat Radiating FINS.

The Table Top Victor "FIN" Demonstrator Sells More VICTORS... FASTER!



This miniature demonstrator proves dramatically the extra heat developed by Victor FINS. Twin thermometers tell the story. One side of this little furnace has FINS . . . the other side does not. Heated evenly on each side by one light bulb; the side with FINS shows readings up to 36° higher than the side without FINS. It furnishes visual proof and it will sell Victors for you right on the prospect's table or desk. It's the HOTTEST furnace demonstration on the market. Write us for full details NOW!

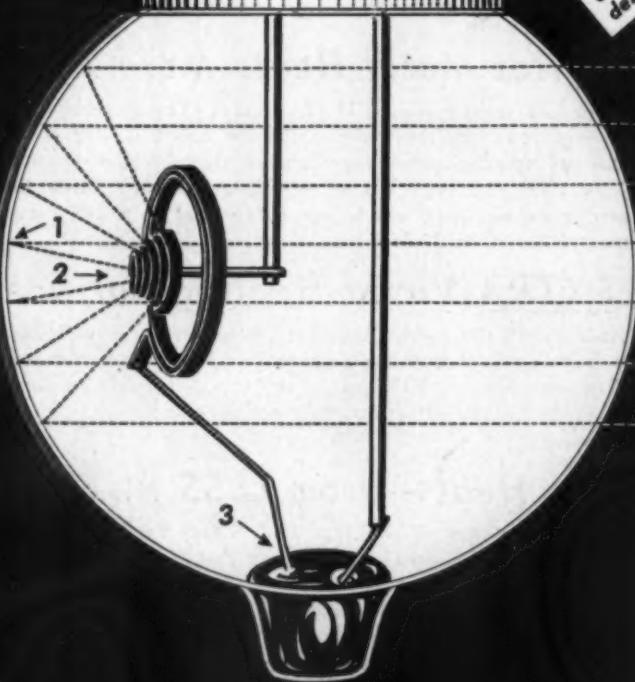
HALL-NEAL FURNACE Co.

VICTOR Quality Furnaces Since 1890

1326 N. CAPITOL AVENUE - INDIANAPOLIS 7, INDIANA

A WONDER IN CONTROL PERFORMANCE FOR DOMESTIC AND INDUSTRIAL OIL BURNERS

MERCOID
VISAFLAME



(Actuated by the light of the flame)

A little thing in itself—but its size is a distinct advantage in modern oil burner design. It can be built into the burner unit

ACTUAL SIZE

NOTE THE SIMPLE OPERATION

1. The light rays from the flame strike the concave mirror, where they are converged and reflected —
2. on the bimetal spiral, where in turn, the light waves are transmuted into heat which —
3. causes the bimetal to move the appended electrode into the mercury pool to close the circuit.

The Visaflame closes its circuit in the presence of a flame and opens its circuit when the flame is absent.

Thousands are now in service.

The Visaflame Control System will make an ideal postwar set-up. Get the facts.

AN EXCLUSIVE
MERCOID PRODUCT

THE MERCOID CORPORATION, 4201 BELMONT AVE., CHICAGO 41, ILL.



FREE... TWO VALUABLE BOOKS TO HELP YOU INCREASE POSTWAR PROFITS

• Here are two books which every sheet metal contractor should have. Why? Because they contain mighty useful information . . . information which will help him to get his share of the profitable postwar market for equipment fabricated of stainless steel.

Titles are: "The Fabrication of Republic ENDURO Stainless Steel" and "The Welding of Republic ENDURO Stainless Steel."

Both books were prepared from data assembled, over a period of many years, by Repub-

lic's experienced staff of metallurgists and engineers. In them you will find detailed recommendations and informative tables regarding the various methods of fabricating Republic ENDURO Stainless Steel.

If you do not already have these books, write for your copies of either or both, today.

REPUBLIC STEEL CORPORATION

Alloy Steel Division • Massillon, Ohio
GENERAL OFFICES CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N.Y.



Other Republic Products include Block, G...



*Buy an Extra
War Bond*



THE RYBOLT HEATER COMPANY
615 MILLER STREET



ASHLAND, OHIO

AMERICAN ARTISAN, July, 1945

There is no magic way to develop a postwar heating unit. Our engineers are not hat pullers. They have to do it the hard way—by the sweat of their brains, by hard figuring and patient experimenting, by checking and rechecking. Then finally after the ideas and designs are translated from paper to metal in a finished model, fitted and set up, exhaustive tests have to be made to make sure that the unit will operate efficiently and economically.

All the way through these laborious processes, changes and revisions have to be made, improvements have to be incorporated and refinements have to be worked out before the unit is ready to go into final production.

When you consider that all this work is multiplied by the number of new designs that are created, you can appre-

ciate some of the headaches of the Engineering Department, and realize that creating a postwar line is not a wand-waving performance.

But the prodigious efforts of our Engineering Department have borne fruit in the form of an attractive RYBOLT postwar line that is very much worthwhile. New and interesting designs have been developed with many improved features that reflect the important advances that have been made in the heating and air conditioning industry during the past several years.

The work of improving and refining the RYBOLT line is still going on with surprising progress. Before very long we will be able to announce some of these new designs as a forerunner of the big new complete RYBOLT line which is rapidly shaping up for production.

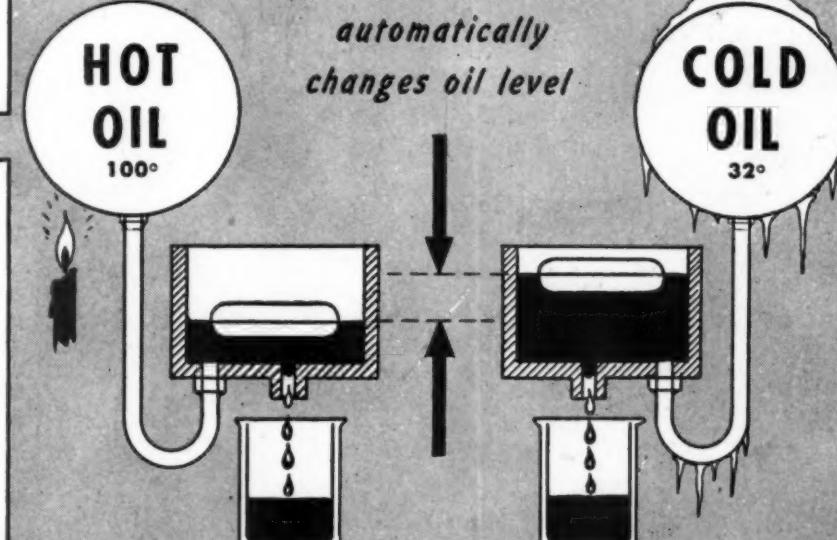
Steady, even fuel flow regardless of oil temperature with "DL" FLOAT VALVES

The automatic fuel
flow compensator
does it!

The viscosity of fuel oil varies with the temperature. Cold fuel oil flows slowly—warm oil, freely. Without the automatic compensator, the fire in the burner would die down if the fuel were cold. If the fuel were warm, too much would be fed to the burner, with resultant waste and overheating.

The automatic compensator "feels" the temperature of the fuel oil and raises or lowers the position of the float—increasing or decreasing the head pressure on the metering valve to maintain constant fuel flow.

Fuel flow compensator
automatically
changes oil level



FUEL DELIVERY TO BURNER REMAINS CONSTANT

THE automatic fuel flow compensator consists of a piece of thermostatic bi-metal which supports the float. When the fuel oil is cold the bi-metal warps and raises the float—allowing the oil level in the float valve body to rise. When the fuel is warm, the bi-metal compensator warps in the opposite direction, lowering the float and consequently the liquid level. Since the fuel delivery through the metering orifice depends upon the head pressure above the needle and the viscosity of the oil, this action of raising or lowering the float results in a uniform rate of fuel delivery regardless of fuel temperature.

This method of compensation, using the temperature of the fuel, is an important feature.

It is but one of the many reasons why you should insist upon "DL" equipped heaters when you are selecting a line to sell.



DETROIT LUBRICATOR COMPANY

General Offices: DETROIT 2, MICHIGAN

Canadian Representative—RAILWAY AND ENGINEERING SPECIALTIES LIMITED, MONTREAL, TORONTO, WINNIPEG

Division of AMERICAN RADIATOR & Standard Sanitary CORPORATION



"DL" Heating and Refrigeration Controls • Engine Safety Controls • Safety Float Valves and Oil Burner Accessories • Radiator Valves and Balancing Fittings • Arco-Detroit Air and Vent Valves • "Detroit" Expansion Valves and Refrigeration Accessories • Air Filters • Stationary and Locomotive Lubricators.

THIS IS THE Inside Story OF THE

90% SAVED

ON KNOWN

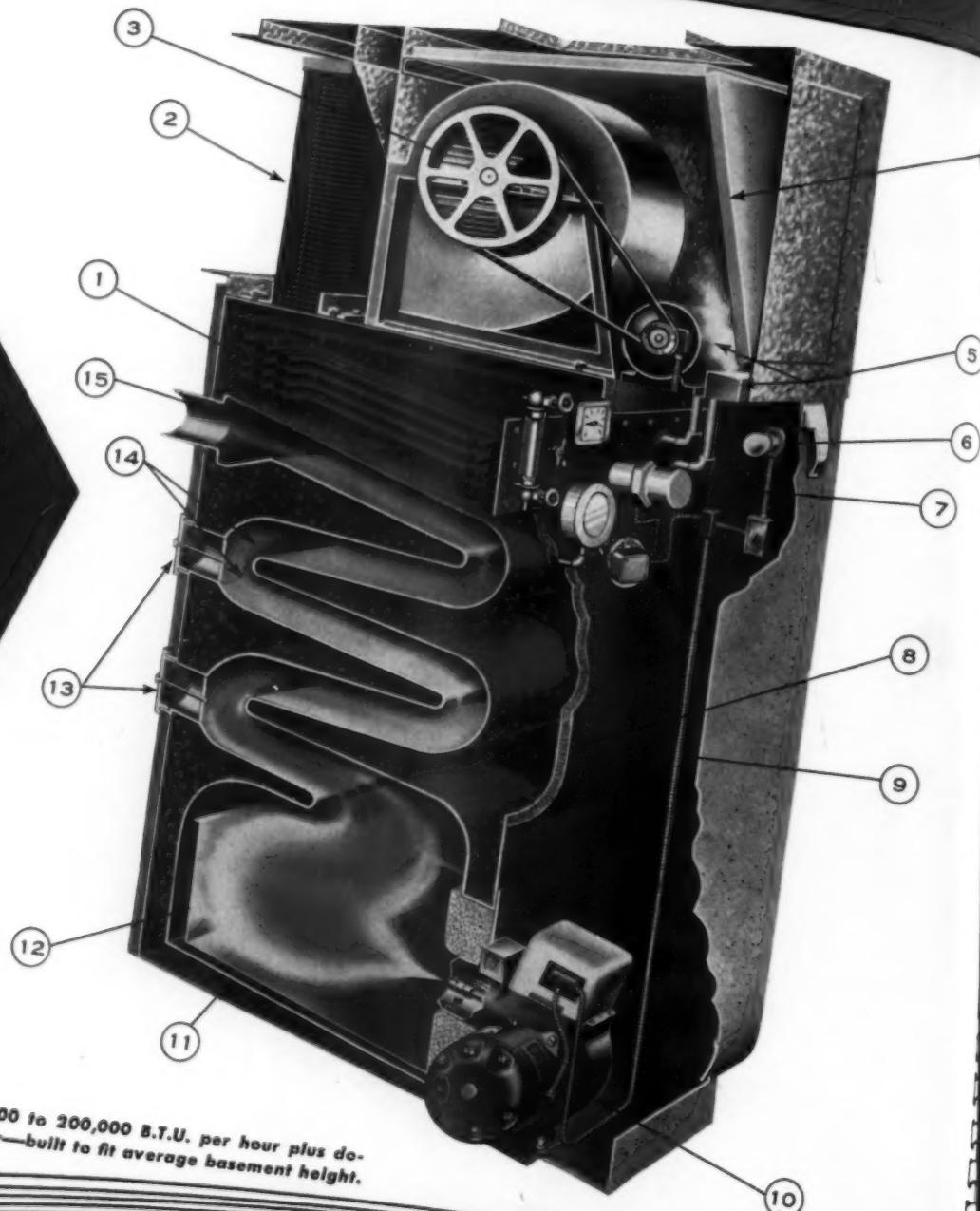
BASEMENT ERECTION WORK

00% SAVED

BY ELIMINATING

PROFIT-KILLING UNKNOWN

INSTALLATION FACTORS



Sizes from 70,000 to 200,000 B.T.U. per hour plus domestic hot water—built to fit average basement height.

FRANCHISES OPEN! Distributors and dealers looking for a fast-selling line of modern heating equipment are invited to investigate Penn Packaged Heat. Because Penn has no re-conversion problem, Penn Dealers will be among the first to get post-war Boiler-Burners, Forced Warm Air and Split Systems . . . all as Packaged Heat . . . units comparable to the modern radio, refrigerator or other factory built appliance.

SALES ADVANTAGES of Penn Packaged Heat are plain to any dealer who has struggled with cluttered, costly parts inventories, tedious basement engineering, expensive assembly-installations that go haywire. What's more, customer confidence responds quickly to your package merchandising. Penn has already shown the new steam or hot water Boiler-Burner Unit in this publication. If you missed it, write for a reprint.

PENN BOILER and BURNER MFG. CORP.
LANCASTER, PENNSYLVANIA

NEW PENN *PACKAGED SPLIT-SYSTEM UNITS

*Delivered Ready to "Pick Up, Set Down and Plug In"

For the first time you see details of Penn's new packaged Split System . . . a de-luxe heating appliance for year-round domestic comfort with gas or oil. You sell this unit without installation headaches or guesswork because it is 100% self-contained, factory assembled and fire-tested before shipment. Your sales position is unmatched for owner benefits. Study the exclusive features . . . they add up to more user satisfaction, fewer service calls and greater profits to you.

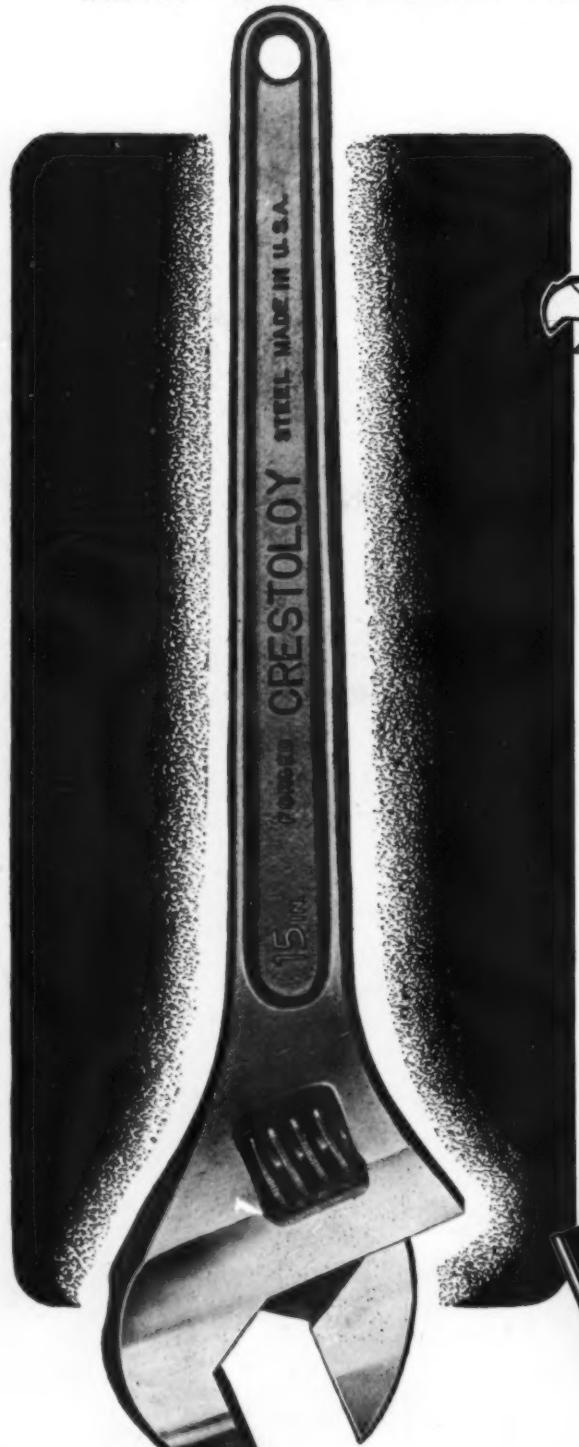
1. Tankless coil provides year round instantaneous domestic hot water (cap. 200 to 300 gal.) Interchangeable coil plates available for either tank or tankless coil. Low cost coils (\$6.00 to \$8.00) solve problem of liming up.
2. Fast action copper heat exchanger, flange mounted directly over steam chamber—absence of piping to supply and return lines eliminates water hammer-knocking in lines.
3. Large, quiet fan draws cold air from return ducts, forces humidified, filtered air through fins of heat exchanger to all ducts. Adaptable for summer cooling. Indirect heating is tops for cleanliness with no chance of burnt or carbonized dust. All air passes through large filters for perfect cleaning. Steam radiation may be used in kitchen or bathroom as well as garage and distant points not practicable for air ducts.
- Humidifier may be controlled to suit seasonal changes and owner's preference.
- Built-in light for easy inspection.
- Extended side walls (patented) form vessel to house burner, controls, wiring, switches and circulator—all mounted, tested and shipped to you as a unit.
- Boiler wall "belly" for extra water capacity and quicker recovery of coil.
- Wiring expertly installed at factory; connects all controls with burner.
- Built-in pressure type burner, designed and made by Penn for peak efficiency as an integral part of the heating package.
- Wet boiler bottom uses heat otherwise wasted in ordinary designs.
- Stainless steel firebox instantaneously transfers heat, cuts down running time.
- Clean-out doors provide access to flues; to clean push dirt into firebox and burn.
- Backward and forward fire travel increases efficiency; graduated flues utilize gases, lower stack temperature.
- Sloping crown sheet causes flow to aquastat of water chilled by domestic coil, brings unit into prompt response and directs water back over crown for quick recovery without turbulence.

MODERN DESIGN . . . ➤
Eye-appealing new jacket for
Penn Boiler-Burner Units;
adapted also for Split Systems
and Forced Warm Air Units.



PENN BOILER AND BURNER MFG. CORP.
LANCASTER, PENNSYLVANIA

There's something about a Crescent **THAT WORK NOT WORDS WILL PROVE**



And it's more than the feeling of confidence that it gives to a good mechanic's hand...more than its sturdy construction...more than the name "Crescent" proudly stamped on the handle.

The answer is Good Work, and lots of it. Look in the tool kits of experienced mechanics and you'll find Crescent Wrenches that may look workworn but not workweary. Crescent and "Crestoloy" wrenches are built right of the best steel to do the best work.

Someday, these famous Crescent "Best Sellers" will again be available. In the meantime, remember the battle is only half-won...buy more War Bonds for total Victory.

CRESCENT **TOOL** **COMPANY**

JAMESTOWN  NEW YORK

CRESCENT **TOOLS**
Give Wings to Work



"HERE'S MY POST-WAR PLAN . . ."

With This Line I'll Sell EVERY Real Prospect"



HERE'S WHY . . .

WEIR-MEYER

means Modern Heat

FOR ALL FUELS . . . FOR ALL HOMES



With WEIR-MEYER I can offer heating equipment as modern as the NEW homes Americans are planning. There's a WEIR-MEYER for cottage or mansion!

I'll sell WEIR-MEYER to those who have tagged their War Bonds "remodeling". The WEIR-MEYER line is complete—the right equipment for every prospect.

WEIR-MEYER is the natural choice when maximum convenience is required. The WEIR-MEYER line includes dependable, trouble-free, fully automatic equipment.

WEIR-MEYER MEANS MODERN HEAT

Longer years of experience, advanced engineering, and designing skill have made leadership a habit with WEIR-MEYER. As manpower and materials become available, there will be increasing quantities of WEIR-MEYER equipment for civilian needs. Post-war WEIR-MEYER equipment offers the finest ever.

MEYER Oil-fired AIR CONDITIONER gives the user of oil a new conception of cleanliness, efficiency and economy of operation.



MEYER Gas-fired AIR CONDITIONER built for efficiency and durability. Easy to install, finer performance, greater convenience.



The NEW WEIR U Series STEEL FURNACE. Famous WEIR reputation plus exclusive and entirely new features.



I'm assured more sales advantages with WEIR-MEYER. For example, their performance record is unequalled. Many WEIR furnaces have been in continuous operation for 50 years—and are still going strong. I can base my sales talk on facts—not just promises.

- If you want to serve your community better—and profitably—get the facts about a WEIR-MEYER dealership. Some territories are "open". National advertising has already created a ready-made market for WEIR-MEYER equipment.

THE MEYER FURNACE CO.

Weir and Meyer Furnaces . . . Air Conditioners
for COAL . . . GAS . . . OIL Peoria 2, Illinois





**"I've found that
it pays to do
business with
MILCOR"**

"Those Milcor people are my idea of swell folks to deal with."

"I'm looking forward to the day when I can again order everything I need from one place. For heating and air-conditioning jobs. For rain-carrying jobs. For roofing jobs. And for other jobs, too."

Many a sheet metal man knows from past experience that doing business with Milcor is a sound way of helping to assure his success.

As soon as sufficient raw materials are released to make quantity production possible, you can again depend on Milcor as a reliable source of supply for practically *all* the sheet metal items you need.

Although war materials still com-

prise the greater part of our production, Milcor peacetime machinery is intact. Therefore, there need be no delay for reconversion.

Expansion of our facilities for sales, production, and shipping puts us in a better-than-ever position to serve your future requirements to your complete satisfaction.

Uniform, related Milcor products give you greater assurance that the job is going up quickly and easily — and help you to be sure your customer is going to be 100% satisfied and willing to recommend you to others.

Look to Milcor for real cooperation in helping you to make the most of the great period of opportunity that lies ahead.

**Soon, we hope, you can again count on
MILCOR
as your dependable source of supply for:**

- Furnace Pipe, Gravity and Forced Air Fittings, Stove Pipe and Elbows.
- Eaves Trough, Conductor Pipe, and other Rain-Carrying Equipment.
- Steel Roof Deck.
- Farm Roofing.
- Louvre Ventilators.
- Ventilators.

... plus interesting new developments that promise to win and hold new customers for you, make you more money.

MILCOR STEEL COMPANY

MILWAUKEE 4, WISCONSIN

Baltimore 24, Maryland • Chicago 9, Illinois • Kansas City 8, Missouri

Los Angeles 44, California • Rochester 9, New York

G-07A

... equipped to provide additional service through

THE J.M. & L.A.
O S B O R N C O.
CLEVELAND 14, OHIO

DETROIT 2 • BUFFALO 11 • CINCINNATI 25

... a Division of Milcor Steel Company.

THE STOKER WITH
THE COMFORT AND ECONOMY
FEATURES THAT BUYERS
HAVE BEEN WAITING FOR

NEW... Improved Stok-A-Fire

EXCLUSIVE
RETORT
FEATURES
INCREASE
HEATING
EFFICIENCY

WITH THE
EXCLUSIVE
COAL-METER
THAT PROVIDES AUTOMATIC
AIR AND COAL CONTROL
ASSURING PEAK EFFICIENCY
AND PERFORMANCE
AT ALL TIMES

**De Luxe
Model**

A NEW
HIGH IN
STYLING
OPERATING
EFFICIENCY
—AND VALUE!

America's most
beautiful stoker
with smartly
streamlined style
and luxury
finish.

This is IT! The New, Improved STOK-A-FIRE De Luxe model! An entirely new and better method of stoker operation giving the advantages of automatic heat in a degree never obtainable before. A high quality stoker at a LOW PRICE made possible by our facilities, 14 years' stoker manufacturing and servicing experience, and our mass production methods.

The New, Improved STOK-A-FIRE De Luxe model—the latest and greatest advancement of an organization noted for pioneering stoker improvements—offers a bigger-than-ever opportunity for bigger sales and profits. Write us at once—or use coupon below—for desirable franchise still available.

Patents Pending

Plus MANY OTHER OUTSTANDING FEATURES

- ★ **SMOKE-BACK CONTROL**
airblast surrounding smoke pipe prevents coal distillation
- ★ **REJECTOR SYSTEM**
reduces jamming hazards by expelling foreign objects from feed screw
- ★ **LEAK-PROOF AIR FEED**
built-in construction supplies ALL the air direct to retort
- ★ **QUALITY PLUS ECONOMY**
a high quality stoker at a low price due to our experience and facilities for mass production.

- ★ **WELDED CONSTRUCTION**
sturdy steel electrically welded into one wear-defying piece.
- ★ **AUTOMATIC AIR-REGULATOR**
automatically provides exact amount of air for rate of coal feed.

Write for Franchise TODAY

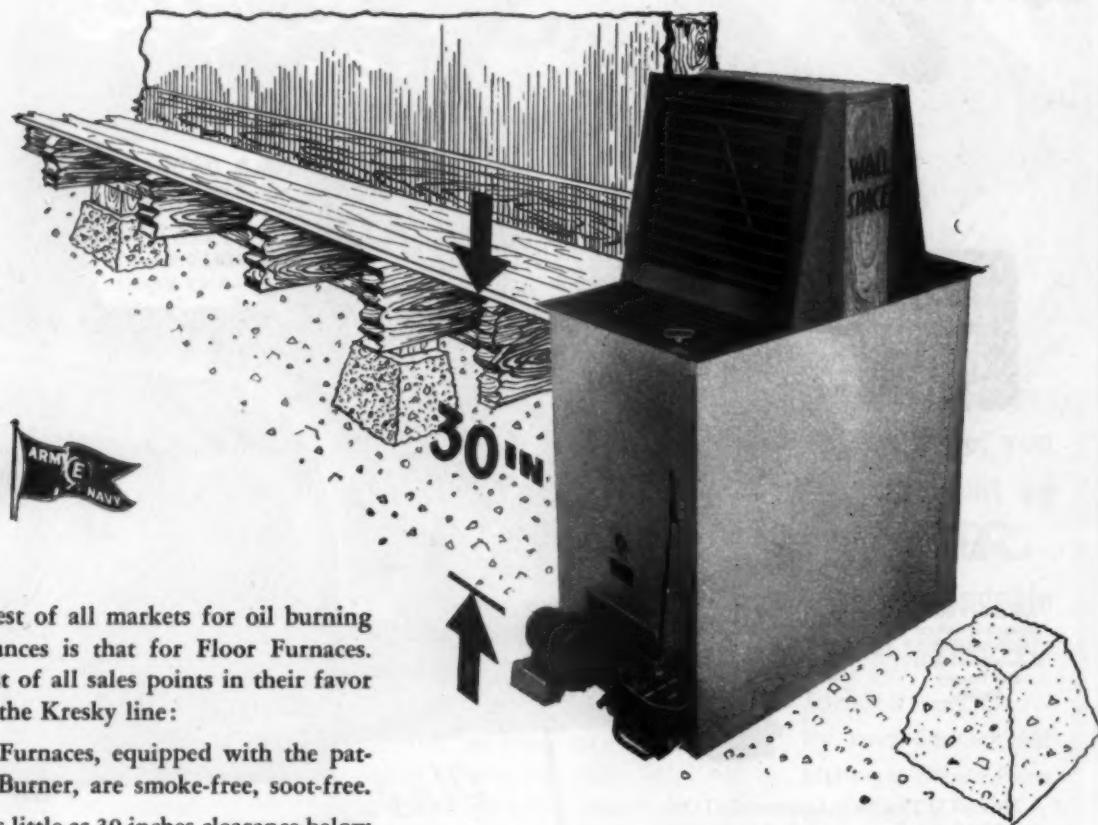
Without obligating me in any way,
please send me full information on
the STOK-A-FIRE franchise. Send STOK-A-FIRE literature.

Name _____
Address _____
City _____ State _____

STOK-A-FIRE CO.
6506 OLIVE BOULEVARD
ST. LOUIS MO.

KRESKY OIL-FIRED FLOOR FURNACES

Excel Six Ways



One of the biggest of all markets for oil burning household appliances is that for Floor Furnaces. And the strongest of all sales points in their favor are possessed by the Kresky line:

1. Kresky Floor Furnaces, equipped with the patented Kresky Burner, are smoke-free, soot-free.
2. They require as little as 30 inches clearance below the floor.
3. There are both floor and dual wall register models.
4. They are available with either manual or automatic control.
5. They are made in four different BTU capacities.
6. They function efficiently on as little as .02 draft.

Kresky has been leading in the development of oil burners and oil burning appliances for nearly forty years. It has a reputation for sound design and dependable construction. And its line has the variety you need for an active, growing business: Floor Furnaces, Space Heaters, Ranges, Basement Furnaces, Hot Water Heaters and Conversion Burners.

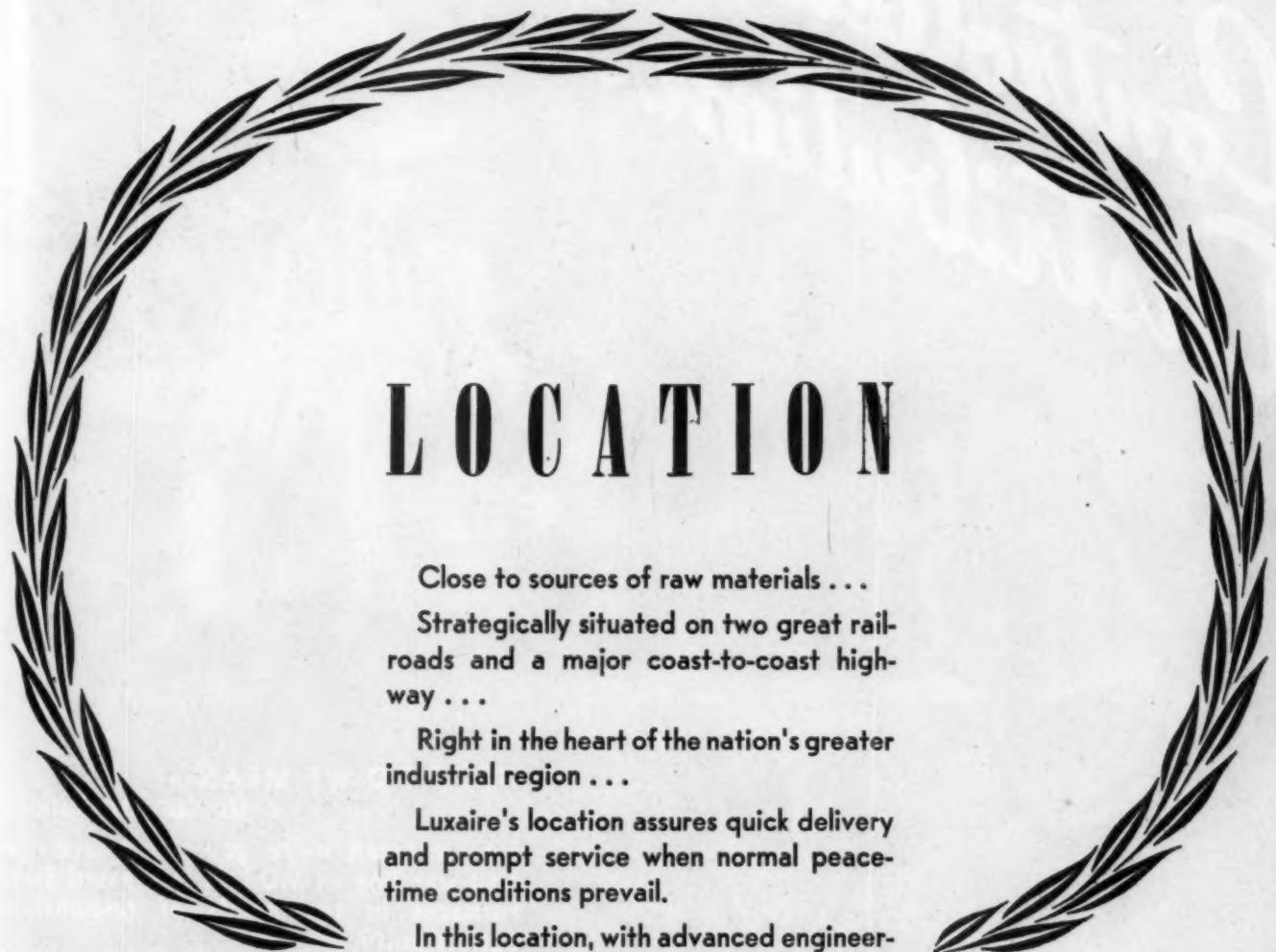
DISTRIBUTORS Look into this long-established, well varied, money-making line!

We're getting set for the nation-wide distribution of double our pre-war output. Write us for the terms of a Kresky franchise now!

KRESKY
MANUFACTURING CO.

Pioneers in Oil Burning Equipment Since 1910
PETALUMA CALIFORNIA





LOCATION

Close to sources of raw materials . . .

Strategically situated on two great railroads and a major coast-to-coast highway . . .

Right in the heart of the nation's greater industrial region . . .

Luxaire's location assures quick delivery and prompt service when normal peacetime conditions prevail.

In this location, with advanced engineering and with constant research for better manufacturing methods, the heating trade can be assured that Luxaire will produce the outstanding line of warm air heating and air conditioning units.

Luxaire

THE C. A. OLSEN MANUFACTURING CO., ELYRIA, OHIO

THE PRE-WAR LINE OF LUXAIRE WARM AIR HEATING
AND AIR CONDITIONING UNITS FOR COAL, GAS, OIL



Series 600
Coal Fired Steel
Gravity Furnace



Series C
Coal Fired Cast
Gravity Furnace



Series 700
Coal Fired Steel
Gravity Furnace



Series AC-700
Coal Fired Steel
Air Conditioning
Unit



Series A
Gas Fired Steel
Air Conditioning
Unit



Series G
Gas Fired Steel
Gravity Unit



Series II
Gas Fired Steel
Utility Air Con-
ditioning Unit



Series 800
Oil Fired Steel
Air Conditioning
Unit

Controlled Distribution..



WHAT DO WE MEAN-- - - controlled distribution?

Do we mean we're going to place the post-war line of MOR-SUN Pressed Steel Furnaces in the hands of responsible outlets only?

Do we mean we're going to be choosy about our outlets?

That's exactly what we do mean!

We're not going "high hat" . . . we're not getting independent . . . and we know we haven't the only fine furnace.

We know that in order to promote our policy of Controlled Distribution we must have a product of considerable merit. And we have. And because we want to protect that product, we're going to hand pick our outlets--little outlets and big outlets--but everyone a good outlet!

In return, we're going to give you territory protection, full merchandising cooperation and a fine product.

One of these days one of our men will be around to see you--about the new MOR-SUN line of pressed steel furnaces--and about MOR-SUN Controlled Distribution.

So remember the phrase - - Controlled Distribution.

"The Sun Never Sets with MOR-SUN!"



MORRISON STEEL PRODUCTS, Inc., Buffalo 7, N.Y.

Coming! Next Month!

ANOTHER BIG

DUST·STOP*

FALL SELLING PROGRAM

AND
What a Program!

Watch this space next month for details of the biggest DUST-STOP Selling Program in history. In addition to powerful National Advertising, reaching nearly ten million families at regular intervals, effective dealer tie-in materials will again be made available FREE—to help you get your share of the big Fall filter-replacement business. Ask your DUST-STOP Distributor about this new campaign. Drop him a line today!

Owens-Corning Fiberglas Corporation,
1930 Nicholas Building, Toledo 1, Ohio
In Canada, Fiberglas Canada Ltd.,
Oshawa, Ontario.



DUST·STOP

*T. M. Reg. U. S. Pat. Off.

AIR FILTERS

—a FIBERGLAS product

Every owner of a forced-warm-air
furnace needs two or more Dust-
Stop Filters—at least once a year.



Versatility IN SHEET METAL RIVETING

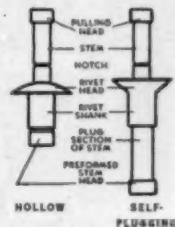
Even the most difficult sheet metal assembly can be fastened easily and quickly—with Cherry Blind Rivets.

These rivets upset from one side of any location, blind or not, without bucking. They work successfully in all sheet metals, in soft or brittle materials, on curved as well as flat surfaces.

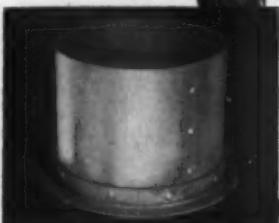
Cherry Rivets are upset with a smooth, easy pulling action, exerted by small, easy-to-handle guns. There is no pounding. Access to only one side of the assembly is

necessary. One man alone can complete any installation.

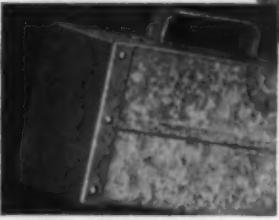
Material thickness and hole size tolerances are generous. Shank expansion is unusually broad. Clinching force is exceptionally strong. Shear values are comparable to solid rivets. There are both self-plugging and hollow Cherry Rivets, made in several types, sizes and alloys. Installed rivet cost is low.



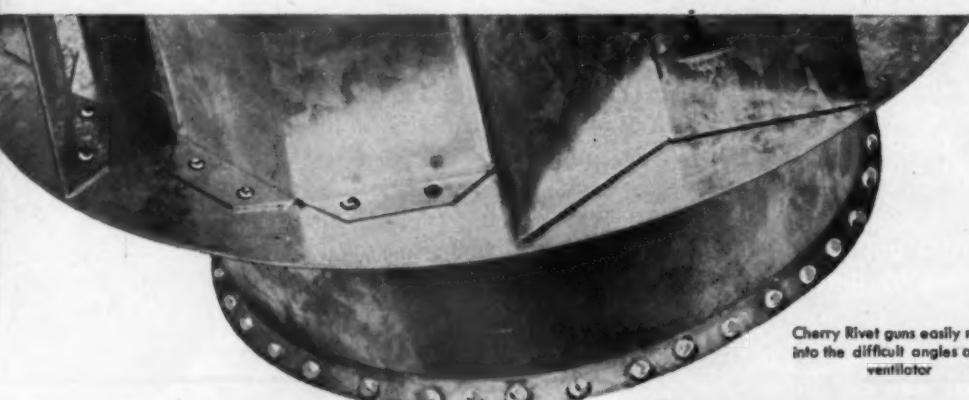
Cherry Blind Riveting tube to a cast elbow



Cherry Rivets conform to curved sheet metal surfaces



Cherry Riveting a duct cap



Cherry Rivet guns easily reach into the difficult angles of this ventilator

For a quick glance at the many types and uses of Cherry Rivets, write now for illustrated Manual D-45, Department A-200, Cherry Rivet Company, 231 Winston St., Los Angeles 13, California.



CHERRY RIVETS. THEIR MANUFACTURE & APPLICATION ARE COVERED BY U. S. PATENTS ISSUED & PENDING

Cherry Rivet
Company
LOS ANGELES 13, CALIFORNIA

TO

Thousands of Dealers

MONCRIEF \$ PELLS

P.R.O.F.I.T.S.

SUCCESS in the heating business comes through a combination of two dominant factors—*sound judgment* and *careful planning*.

Thousands of dealers who staked their future on Moncrief products have enjoyed an ever-growing, profitable business. They showed sound judgment in selecting the Moncrief line.

Moncrief dealers sell quality heating

equipment that has been a leader in its field for more than 50 years. By careful planning they have cashed in on a line with a national reputation.

Success with the Moncrief line is not unique—it's commonplace, as the sales records of thousands of Moncrief dealers prove.

With sound judgment and careful planning on your part, Moncrief can be a line that will spell P-R-O-F-I-T-S for you, too.

WARM AIR
FURNACES

FURNACE PIPE
AND FITTINGS

AIR CONDITION-
ING UNITS

COAL
GAS . . . OIL

MONCRIEF

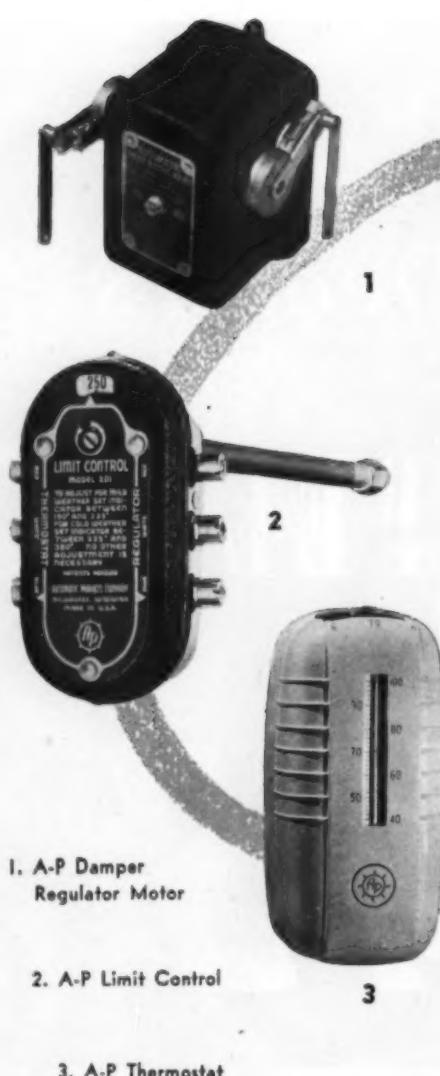
SINCE 1895

THE HENRY FURNACE CO.

MEDINA, OHIO



3-PIECE AUTOMATIC HEAT REGULATOR SET



DESIGNED TO SAVE TONS OF FUEL

TAKE ORDERS NOW!

Installation of this "A-P" 3-Piece Automatic Heat Regulator Set saves your customers fuel — insures uniformly healthful heating from hand-fired furnaces. "Shovel-it-on, take-a-chance" methods of firing must be stopped if our fuel shortage is to be relieved.



Attach the "A-P" Thermostat to an inside wall, about 4 feet above the floor. This device will "float" the fire so as to prevent excessive heat.



Next, an "A-P" Limit Control is placed on the furnace bonnet. This prevents the furnace heat from overshooting the setting of the room thermostat. Keep Limit Control adjusted to outside weather for satisfactory sentinel of fire.

Then install the "A-P" Damper Regulator Motor, and connect to Room Thermostat and Limit Control. This wear-resistant unit is treated to avoid rusting from summer basement dampness.



These efficient, fuel-saving "A-P" 3-Piece Automatic Heat Regulator Sets will soon be available again. Meanwhile, build your own backlog of installation orders — and future PROFITS! With an estimated 40-Million-ton coal shortage facing us, it is imperative that none of your customers continue on a "shovel-it-on, take-a-chance" basis.

AUTOMATIC PRODUCTS COMPANY

2470-C N. 32nd Street Milwaukee 10, Wisconsin



DEPENDABLE CONTROLS
FOR HEATING • AIR CONDITIONING • REFRIGERATION

LOW-COST HEAT for low-cost Homes



**FITZGIBBONS
WARM AIR FURNACE
80 FWA**

The right unit for low-cost housing. For hand-fired coal, but with thermostat-controlled blower forcing circulation of warmed air. Features Fitzgibbons "Weldseal" construction which positively insures against leakage of flue gases into the air stream. Easily and quickly installed, moderate in price, emphatically low in fuel cost.

BUY and HOLD
U. S. WAR BONDS
and STAMPS



60TH
YEAR

The home-building program is long overdue. The release of materials is imminent. The blueprint stage is here and in many cases, past. Great developments of low cost housing are projected—and of moderate cost individual homes as well.

Fitzgibbons knows what the potential owners of these homes want in warm air and conditioned air comfort. Here it is—in hand-fired "semi-automatic" warm air for the low-cost home, in automatic conditioned air for the moderate priced residence. Both with remarkable standards in fuel economy.

Fitzgibbons Boiler Company, Inc.

101 Park Avenue, New York 17, N. Y.
Works: OSWEGO, N. Y. • Branches in Principal Cities
Member Indoor Climate Institute Member Steel Boiler Institute

FITZGIBBONS 65-80-100-DA CONDITIONER

Designed for the moderate-priced home in which is demanded all the comfort of warmed, humidified, filtered and circulated air, in a unit that has beauty in appearance and finish, quietness in operation, and typically Fitzgibbons fuel saving. Welded steel-construction, easy cleaning, operates with an oil burner, or gas burner.



YOU CAN'T GO WRONG WITH A
FITZGIBBONS



Ducts for good weather with

It's always good weather indoors, where there's a well-designed air-conditioning system. In many an air-conditioning installation the ducts that carry the "good weather" are made from Beth-Cu-Loy galvanized sheets.

These copper-bearing sheets, with their tight, uniform zinc-coating, are exceptionally ductile. They can be cut, formed on the brake, hammered and soldered readily.

Copper-bearing steel of Beth-Cu-Loy composition—0.20 to 0.30 percent copper—is from two to three times more corrosion-resistant than ordinary steels or irons. With the galvanized coating, this gives ample protection in installations where corrosion is a factor.

BETH-CU-LOY GALVANIZED Steel Sheets

Plan to use Beth-Cu-Loy galvanized sheets on your next job where corrosion-resistance is needed. Their slight extra initial cost will be more than repaid in long and reliable service. Full information at the nearest Bethlehem district office—or write direct to Bethlehem Steel Company, Bethlehem, Pa.





Illustration from Bryant national advertisement

THINGS ARE COMING YOUR WAY!

Many pleasant surprises are due when the lid of wartime restrictions is lifted and you gaze upon the Bryant Heater postwar line—for, here at your command, will be the *most complete line of gas heating equipment in the nation!*

From the Bryant Heater laboratories where the first gas home heating equipment was designed, will come new improvements, "new idea" products to help you make sales in every type of home. This is not merely a promise born of postwar

dreaming, either. Equipment that will make up the Bryant Heater line has been actually constructed, now is under test so that you may sell proved performance!

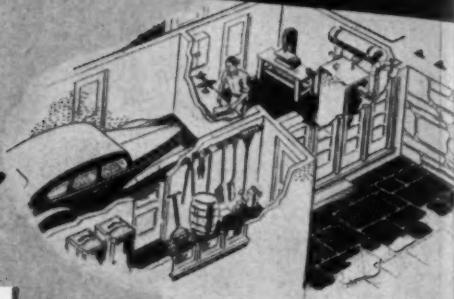
Soon, the Bryant Heater distributor in your territory will be ready to tell you the complete story of this unusual postwar dealer opportunity. It will be worth your while to let him explain how *things are coming your way!*

THE BRYANT HEATER CO., CLEVELAND, OHIO
One of the Dresser Industries

LET THE PUP BE FURNACE MAN



*No basement, no attic
yet this rust-proof house
HAS EVERYTHING!*



Note the all purpose storage space,
and also the workshop.

NOTE: Restrictions which have controlled our facilities and products for war purposes have been relaxed. We are now permitted, subject to any continuing requirements of the Government, to resume manufacture for many civilian uses.

The advertisement reproduced here appears in full color in American Home Magazine, Better Homes and Gardens, and Banking... publications which reach a combined circulation of over four and three-quarter millions.

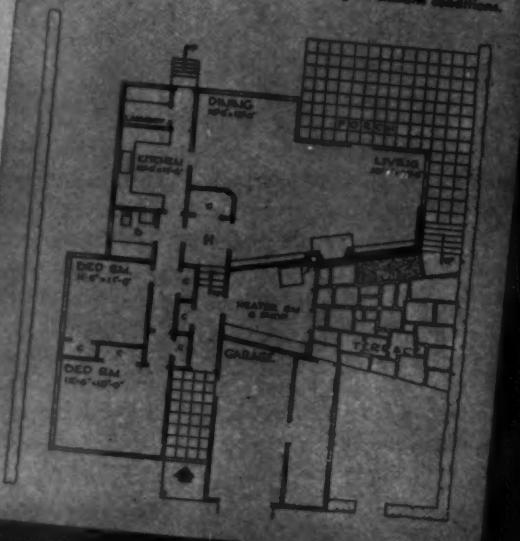


The copper roof is of 10-ounce standing seam construction. Chimney, door and window flashings, gutters and downspouts are copper. Insect screens are bronze, and hardware, both interior and exterior, is solid brass or bronze.

Hot and cold water lines that can never rust are of copper tubing or brass pipe. To keep the entire water supply system rust-free and insure long trouble-free service, the water heater tank is of rustless Everdur®.

Designed for a lot of 60 by 100 feet, this medium-priced ranch-type home presents an air of spaciousness. Completely rustproofed with copper and brass, it will cost less to live in.

Reg. U. S. Pat. Off.
No roof grows old more gracefully than one of copper—adding richness of tone as the years go by, a roof that is fire-resistant, requires no painting and can never rust. The roof illustrated, made of 10-oz. "Anaconda Economy Copper," is suitable for roof slopes of 3 inches to the foot and upward, depending on climatic conditions.



Anaconda Copper & Brass



THE AMERICAN BRASS COMPANY

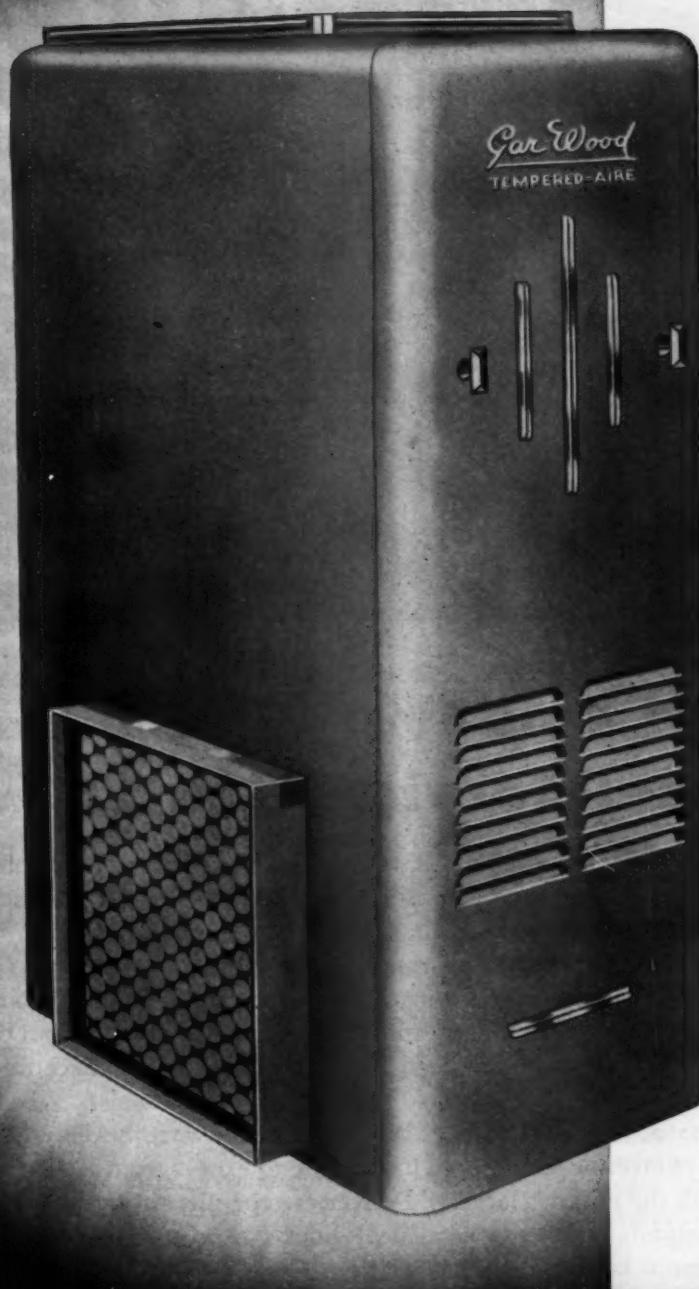
General Offices: Waterbury 88, Conn.

Subsidiary of Anaconda Copper Mining Company

In Canada: ANACONDA AMERICAN BRASS LTD., New Toronto, Ont.

BUY WAR BONDS
The Victory You Depend On, Depends On You!

NEW! . . . first time shown!



Gar Wood

**OIL-FIRED
TEMPERED-AIRE
HOME HEATING UNITS**

The Pioneer Burner Unit

Here it is . . . an actual photo of the new Gar Wood Oil-Fired Tempered-Aire! Everything your customers can ask for is embodied in this fully automatic heating unit. It is beautifully designed, more compact than before, and revealed by laboratory reports to be even more efficient and economical than its famous predecessors. This latest contribution to better living is the result of many years of successful operation of thousands of Gar Wood Heating Units PLUS recent research and development. Be sure YOU'LL sell the best . . . it's easier. Write for the exclusive Gar Wood Franchise in your community.

Deluxe heating units, incorporating the famous Gar Wood washable cloth filters will also be available.

OTHER Gar Wood Heating Units to be announced in the near future include: Boiler Burner Units (steam or water) Conversion Burners, Indirect Cabinets and Water Heaters.

GAR WOOD INDUSTRIES, INC., HEATING DIVISION

7924 RIOPELLE STREET

DETROIT 11, MICHIGAN

Canadian Distributors: Engineering Industries, Ltd., 282 Dupont St., Toronto, Ont.

HOISTS and BODIES . . . WINCHES and CRANES . . . TANKS . . . ROAD MACHINERY . . . MOTOR BOATS



Did You Ever Visit A Steel-Service Plant?

Let's take a quick look inside one of the 11 Ryerson Steel-Service plants. Before us stretch acre upon acre of steel in countless shapes and sizes—giant structurals, gleaming sheets of Allegheny Stainless, towering racks of alloy bars.

Everything is movement. A friction saw roars as it bites through a beam. We hear the dull crunch of heavy shears. Overhead a giant crane is speeding tons of plates to the loading door. Hundreds of tons are continuously moving out of stock to supply war industry and to speed partial conversion to peacetime production.

Today sizes may not always be in balance because of heavy wartime demands and we cannot always give the service you have come to expect from Ryerson. But our stocks are still the nation's largest. Deliveries generally prompt. Service interested and helpful. When you need steel quickly from stock phone the nearest Ryerson plant.

Principal Products

Bars, Shapes, Plates, Sheets,
Floor Plates, Structural,
Tubing, Allegheny Stainless,
Alloys, Tool Steel, etc.

Write for Stock List

Joseph T. Ryerson & Son, Inc., Steel-Service Plants: Chicago, Milwaukee, Detroit,
St. Louis, Cincinnati, Cleveland, Pittsburgh, Philadelphia, Buffalo, New York, Boston.



RYERSON



RESIDENTIAL AIR CONDITIONING • WARM AIR HEATING • SHEET METAL CONTRACTING

Our Help is Needed to Save Fuel

If the figures of 1945 fuel production to date and anticipations, as released from Washington, prove correct, the need for fuel conservation this coming winter will be more acute than in 1943 and 1944. The situation is summarized in this issue. Briefly, here is the picture:

Coal—It is forecast there will be some 37 million tons of coal less than actual requirements. This is for all types of coal in all regions, and for all coal by-products. The problem of distribution, due to railroad congestion, will be worse than last year.

Oil—Home owners started the 1944-1945 heating season with approximately 65 per cent of their calculated requirements. This was increased, through some relaxation, to about 75 per cent for the season. The coming heating season (1945-1946) anticipates not more than last season's oil, or about 75 per cent of actual requirements.

Gas—The official announcements have not yet been made, but gas utilities (except in the Appalachian region) have been notified by letter from War Utilities that each gas company may accept additional gas house heating load, providing such additions do not interfere with the war effort. So far as we can tell, this means if a gas company has the gas (either natural, mixed or manufactured) and war plants do not need it, the company can take house heating load. But presumably, the gas company may not expect to get materials for new mains or extensions and may not expect additional labor. There should be, on the strength of this permission, more gas house heating. Heating dealers will have to check with their local gas company to determine what this means in their locality.

All in all, this fuel shortage situation means warm air heating dealers should plan to help their customers put their heating plants in top-notch operating condition as soon as possible.

Generally speaking, warm air heating dealers face much the same problems this summer they faced last summer and the summer before. We are still struggling with an acute shortage of manpower except in a few areas. New furnace replacements are just as hard to get now as they were last year. Repair parts

are as slow in coming through or as hard to find as last year. Sheets for repair purposes are just as scarce in most areas as they have been. Repairs of equipment needing factory overhaul are just as slow in getting through.

But the country—and your customers—needs your help more than ever before.

As was done last summer and the summer before, Washington is releasing a large consumer advertising campaign stemming from a "Prepare for Winter" slogan. The details are not yet all settled and much of the material is still on the printing presses, but the campaign will be under way fully by the end of July.

This campaign urges owners to (1) get their heating plant cleaned and put in top operating efficiency; (2) buy furnace controls such as draft regulators, thermostats, damper motors, limit controls, etc.; (3) have the structure insulated, storm-sashed, weatherstripped; (4) get fuel supplies in early.

What can we do?

Our job is primarily in actions 1 and 2 above. To some extent we can aid in action 3 by making heat loss surveys and recommending insulation where our survey shows insulation will cut fuel requirements.

The trick, for our industry, will be to get the orders for cleaning, repair, improvement booked as quickly as possible and spread these orders through the weeks so that the maximum number of jobs can be handled. Undoubtedly, the government's radio announcements, car cards, billboards, newspaper advertisements will stimulate home owners to order these things done now. Perhaps for most warm air dealers this government campaign will bring in all the business they can handle. If not, the dealer can run a postal card or newspaper or direct mail campaign of his own to his own customers to get a full booking of orders for the next three months.

As an aid to readers, there is published in this issue a summary of the fuel saving services our dealers ordinarily offer and how we should do them. This data is taken from test data sources and gives the actual results we may expect—not the over-optimistic claims so often published. Dealers can feel safe in using our figures of savings when explaining to owners how much fuel saving each service offers.

The Fuel Conservation Program (1945)

Again, as explained on this page and the next, the government is sponsoring a Fuel Conservation Program—even more necessary than last year because this year coal production is falling behind demand. On these two pages the details of the program are set forth. Our job is to help customers get the maximum return from their fuel supply by putting heating plants in top operating condition. To do this, our customary heating plant services are exactly what is required. On six pages following we present, for quick reference, the various services which bring operating efficiency—with tables and charts which show the fuel conservation possible with each service. Readers should remember OPA requires a price ceiling—if you have previously offered these services you have your approved price; for services you have not offered use the going price for your community.

THE Office of War Information, the Solid Fuels Administration for War, will jointly, with WPB, FHA, OPA, PAW, put on another fuel conservation publicity program this year. In some respects the 1945 campaign will be more extensive than last year's program. The supply of fuel is more critical this year than it was last year and fuel conservation is even more necessary this year if the inadequate fuel supply is to be stretched sufficiently to cover all essential needs.

The program will cover all phases of fuel conservation and will emphasize the "Prepare for Winter" theme, emphasizing the early purchase of fuel, etc., and

1. Check furnace—install heating controls.
2. Insulate walls and ceilings.
3. Order storm sash.
4. Weatherstrip—caulk cracks.

OWI radio allocations on the "Prepare for Winter" program at present are:

Network Allocation	Week of May 28
Network Allocation	Week of June 4
Network Allocation	Week of July 9
National Spot	Week of July 2
National Spot	Week of July 16
National Spot	Week of July 23

August and September Allocations to come.

The OWI Women's Radio War Guide for July will contain four or five pages of material for use in radio programs aimed at women. The Guide is sent to about 700 women's radio editors.

The radio network allocation results in a coverage of about 100 million listener-impressions per week; the national spot plan is about 20 million. Weekly schedules showing the time of shows, etc., will be announced as soon as they are printed, usually about two weeks in advance of broadcast.

The SFAW's "Order Coal Now" poster is now being

distributed, and 30,000 of the "Prepare for Winter" posters are now being printed for distribution in July to selected OWI mailing lists, industry channels, etc. There will be car cards and posters, too.

A Proof Book, reproducing 30 or 40 "Prepare for Winter" advertisements of all sizes, is now on the press. Books will be supplied as soon as possible to all daily newspapers, trade papers, key industry points through which local sponsors (banks, dealers, insulation applicators, heating controls companies, contractors, hardware dealers, building supply houses—each group has a special page of advertisements) may obtain free mats. Proofs will be rushed to industry and trade people whose cooperation in securing maximum publicity for these mats is essential for the success of the project. The proof book was prepared by the task force agency appointed by OWI and the War Advertising Council; was printed, like most of the other materials in the campaign, by SFAW.

A 1-minute movie short—to be sandwiched in all the five newsreels—is on the OWI movie schedule for release June 21 and will show in about 12,000 theaters.

In addition to basic-news stories prepared and sent out by SFAW, OWI will send through its regular news channels material specially angled for trade press, rural press, shopping newspapers, foreign language press, etc. "Prepare for Winter" plugs have already appeared in four of OWI's weekly box which is sent out over the three wire services each Monday. These are capsule reminders of the important wartime activities and are used by about 400 newspapers, many of which put the box on page 1. Miscellaneous publicity activities include preparation of a cartoon series (mats available through OWI); promotion of magazine articles, etc.

All the Government agencies interested in Fuel Conservation (SFAW, WPB, FHA, OPA) have been asked to prepare statements about the latest fuel facts, and

to endorse the best methods of conserving fuel and heat. When this material is at hand, OWI will print and distribute (to about 10,000 "media points") the program book which consolidates all the official Government policies and facts on Fuel Conservation.

Here is government's analysis of the situation:

The domestic fuel situation will unquestionably be tighter this coming winter than at any time since the war began. The magnitude of the job ahead in the Pacific will keep fuel requirements high, and manpower, equipment and the other necessary factors in supplying fuel will remain short. For their own protection, therefore, civilians must do everything they can to get their homes ready for the cold weather now. Home owners should be urged to stock up early on whatever kind and amount of fuel their dealers can let them have, and should act now to conserve fuel next winter by installing heat-saving materials and devices and by checking up on all heating equipment to insure peak efficiency.

All Fuel Will Be Scarce

a. **COAL**—Supplies generally will continue short of war-expanded requirements. Although the mines are producing far greater tonnages than before the war—and with the smallest crews in over 40 years—sufficient manpower cannot be spared from other war needs to produce fully our tremendous wartime fuel requirements. Should industrial activities continue at current levels, the over-all coal production deficit will be more than double that of last year. Shortages of other fuels will continue to place a heavy burden on coal. Also, fuel dealers will continue to be short of manpower, trucks, tires, etc., for making deliveries.

In order to give war industry more fuel, deliveries of the widely used Eastern coals for household heating and other domestic uses already have been limited to four-fifths of normal requirements for next winter. Similar restrictions will be applied to other coals as conditions necessitate. Even these limitations will leave industry substantially short of the fuel it needs to do its job.

b. **OIL**—Home heating fuel oil and kerosene reserves are extremely low, and the supply available for next winter is likely to be as limited as it was during last winter. Oil users, who now are allotted three-fourths of their normal quantity, must continue to do with less fuel. Since the size of the civilian supply will be contingent on military demands, there is little likelihood of any increase for civilians until after Japan is defeated.

c. **GAS**—No appreciable reduction in requirements is anticipated during the fuel year beginning April 1, 1945, and shortages of supply will continue to exist, particularly in the East. In many places, fuel gas is made from or enriched by war scarce fuel oil and coal. Even though gas supplies are expected to be adequate

for high wartime needs in many places, particularly in or near large natural gas producing fields, we still do not have enough of this war fuel to waste it.

d. **WOOD**—Probably more extensively used than any other heating fuel except coal, has been sharply curtailed by the war, particularly in the Pacific Northwest, New England and the Southeast. This growing shortage has added appreciably to the burden on coal.

Supplies of firewood, sawdust and "hog fuel" (chopped up wood chips from the wood fabricating industries) may be more scarce than heretofore in the Pacific Northwest, and the supply in other parts of the nation will likely be affected adversely by shortages of manpower.

e. **COKE**—Made from the most scarce kinds of bituminous coal, by-product coke is short for domestic heating, because war industries need record tonnages to make steel. Many persons who formerly burned this fuel must now use coal, and those who burn by-product coke are limited to four tons for every five they normally would use.

Need for Conservation

In the face of continuing fuel shortages the need for conservation by all users is inescapable. Nearly every user must make a lesser amount do the work of normal quantities. Conservation need not mean going without sufficient heat. It should mean getting from the limited supply of fuel available enough heat to keep the home, school, office or shop healthfully warm. This can be done by using fuel more efficiently. This entails anticipating and preventing heat losses.

Civilians should be urged to prepare for winter now by doing the following things:

1. Store this summer whatever kind and quantity of fuel your dealer can let you have. If you burn coal or coke, don't wait for some preferred kind that may never be available or insist on getting more than your fair share. Take your dealer's advice on your coal problems.

2. Check up on all heating equipment, whether fired by oil, coal or gas, to insure peak efficiency. Clean your furnace and install controls or other heat saving devices where available. Learn how to get the full amount of heat from the fuel you use.

3. Protect your home against loss of heat by installing insulation, storm doors and windows, and weatherstripping. The work can be financed with convenient monthly payments suited to your income on the FHA plan.

NOTE: Certain warmer sections of the country are naturally not as directly affected by this program as other regions. Nevertheless, fuel supplies will be tight throughout the nation and everyone must conserve them. So wherever fuel is used at all, it is necessary to urge the public to take these conservation measures so as to help reduce demands on the total fuel supply.

On six pages following, ten services we can readily offer are described. The results to be expected are shown in charts and tables.
Each service will save the owner fuel.



Combustion Efficiency (Coal)

ONE of the first checks which should be made in every fuel waste survey is for combustion efficiency. This check is easily made as explained following:

Combustion efficiency is commonly expressed as a percentage of the heat given by the fuel as 100 minus the flue gas losses per pound of fuel, expressed as a percentage of the calorific value of one pound of fuel.

In the field, the flue gas losses at the smoke outlet of the furnace, excluding those losses resulting from unburned combustibles, can be determined by measurements of the flue gas temperatures and CO₂ content of the flue gases, and by the use of the flue gas loss tables accompanying.

The procedure for checking combustion efficiency in a coal-fired furnace consists of inserting a flue gas thermometer in the smoke pipe between the furnace and the draft adjustor and reading the temperature when a brisk fire is burning. The tube of the portable CO₂ analyzer should be inserted at the same hole used for the thermometer and a sample of the CO₂ content of the flue gases should be measured.

According to the type of coal used, refer to Tables 1 or 2 and determine and read the total loss in flue gas in percent for the type of fuel burned.

For example, in Table 2 for anthracite coal, if the thermometer shows 500 deg. flue gas temperature and if the CO₂ reading shows 9 per cent, the intersection of these two lines gives 21.0 or 21 per cent total loss in flue gas.

Similarly, if high volatile bituminous coal is used (Table 1) and the flue gas temperature is 500 per cent and the CO₂ reading shows 9 per cent, the total loss in flue gas is 21.8 per cent.

Certainly, somewhere in the neighborhood of 50 to 60 per cent total furnace efficiency should be aimed for. Some indication as to what may be expected in a good installation is reported in the University of Illinois Circular No. 15, which shows that "The furnace efficiency was 59 per cent and tests showed that 41 per cent of the heat of the fuel was given up from the furnace through other channels than the circulating air. Possible sources of loss appeared to be chimney losses and furnace casing losses. The result of flue gas analy-

sis and temperature readings indicated that under ordinary operation the loss due to dry flue gas was 12.6 per cent; loss due to moisture and hydrogen in the coal 2.5 per cent; loss due to carbon monoxide in flue gas, 4.1 per cent, giving a total at the smoke pipe connection to the furnace as a percentage of the heat in the fuel of 19.2 per cent.

"The remainder of the heat of the fuel consumed, or 21.8 per cent, must be charged to radiation from the front, floor, bonnet and casing of the furnace and to the evaporation of water for humidification."

Table 1

Total Loss in Flue Gas in Per Cent for High Volatile, Bituminous B Coal

(Combustion is assumed as being complete, that is with no carbon monoxide or free hydrogen in flue gas)

Flue Gas Temperature Deg. F.	Per Cent CO ₂ in Flue Gas										
	5	6	7	8	9	10	11	12	13	14	15
300	20.6	18.0	16.1	14.7	13.7	12.8	12.1	11.5	11.0	10.6	10.2
400	27.5	23.9	21.3	19.3	17.8	16.5	15.5	14.6	13.9	13.3	12.7
500	34.5	29.8	26.4	23.9	21.8	20.1	18.9	17.8	16.8	16.0	15.3
600	41.8	35.8	31.7	28.6	26.0	23.8	22.3	21.0	19.8	18.8	17.9
700	49.1	42.0	37.0	33.3	30.2	27.6	25.8	24.2	22.8	21.7	20.6
800	56.4	48.1	42.3	37.9	34.4	31.5	29.3	27.4	25.8	24.5	23.3
900	63.9	54.3	47.7	42.7	38.8	35.4	32.9	30.7	28.9	27.4	26.0
1000	71.7	61.0	53.3	47.6	43.1	39.6	36.6	34.2	32.2	30.3	28.8

Note: Maximum percentage of CO₂ for condition of zero excess air is 18.16%.

Table 2

Total Loss in Flue Gas in Per Cent for Anthracite

(Combustion is assumed as being complete)

Flue Gas Temperature Deg. F.	Per Cent CO ₂ in Flue Gas										
	5	6	7	8	9	10	11	12	13	14	15
300	19.8	17.0	15.0	13.6	12.3	11.3	10.4	9.8	9.3	8.8	8.4
400	27.3	23.3	20.6	18.5	16.7	15.3	14.1	13.2	12.4	11.7	11.2
500	35.1	29.8	26.1	23.3	21.0	19.2	17.8	16.6	15.6	14.7	14.0
600	42.9	36.4	31.7	28.2	25.4	23.2	21.5	20.0	18.7	17.6	16.7
700	50.8	43.0	37.5	33.3	29.9	27.3	25.2	23.4	21.9	20.7	19.5
800	58.9	49.7	43.3	38.5	34.6	31.5	28.9	26.9	25.1	23.7	22.3
900	66.9	56.5	49.0	43.7	39.4	35.7	32.9	30.5	28.5	26.8	25.3
1000	74.9	63.6	55.4	49.2	44.1	40.0	36.8	34.2	31.9	30.0	28.3

Note: Maximum percentage of CO₂ for condition of zero excess air is 19.35%.

Combustion Efficiency (Oil)

THE procedure for checking combustion efficiency of oil burning furnaces is quite as easy as the

air input should be reduced. If the flame is smoky orange, there is not sufficient air for combustion and

the air supply should be increased. Most manufacturers recommend the flame that is just verging on a hazy atmosphere. Take a clean porcelain rod similar to that used in bathrooms and insert the rod in the smoke pipe for about 15 minutes. If, on removal, this rod is sooty, the fire can stand more air.

Insert the tube of the draft gauge into the combustion chamber and out of the path of the flame. The draft should read about 0.02 inch. If the draft reading is taken at the smoke outlet of the furnace, the draft should be between 0.04 and 0.06 inch.

Insert the flue gas thermometer at the smoke outlet of the furnace and get the flue gas temperature. If there is a check draft opening in the furnace ahead of the smoke outlet, such opening should be temporarily closed while the reading is taken.

Insert the gas sampling tube from the CO₂ analyzer in the smoke pipe and take a reading. Referring to Table 3, at the intersection of the recorded flue gas temperature and the per cent of CO₂ in the flue gas will show the total loss in flue gas in per cent for the oil burner.



(Gas)

procedure for coal. As to what constitutes an efficient oil burning job, here is a guide to follow:

For so-called gun-type oil burners, the minimum CO₂ should be 8 per cent; for vaporizing or rotary burners, the minimum value should be 10 to 12 per cent of CO₂.

An oil-burning system may be checked by this procedure:

The burner should be started and when the burner is normally operating, the flame should be observed. If the flame looks white, it is an indication of too much air and the

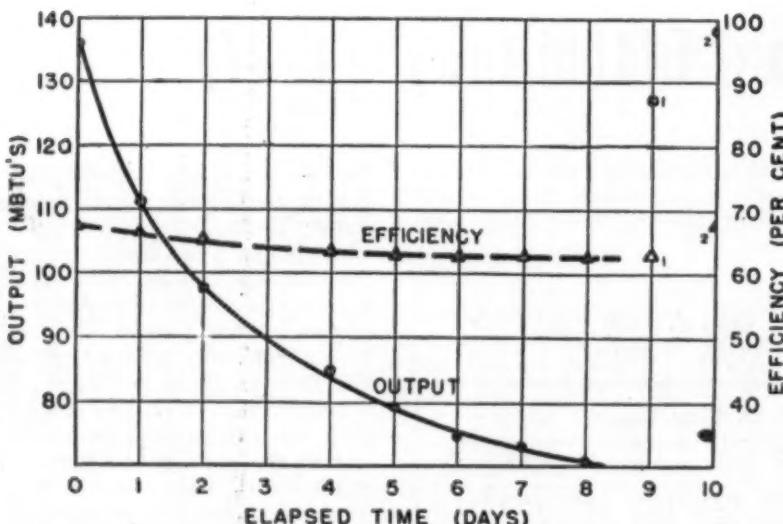
THE procedure for checking the combustion efficiency of a gas burning furnace (either conversion or gas designed) is identical with that used with the oil burner installation and by using Table 4 the intersection of the flue gas temperature and the per cent of CO₂ in the flue gas will give the total loss in flue gas in per cent for natural gas.

Tests conducted by A. G. A. indicate that with natural gas a CO₂ content from 9 to 11 per cent should be aimed for. With mixed gas, a 9 to 12 CO₂ content in the flue gas is possible. With manufactured gas, a 7 to 10 per cent CO₂ contents should be attempted.

Table 4
Total Loss in Flue Gas in Per Cent for Natural Gas
(Combustion is assumed as being complete)

Flue Gas Temperature Deg. F.	Per Cent CO ₂ in Flue Gas							
	4	5	6	7	8	9	10	11
300	22.1	19.9	18.4	17.4	16.6	16.0	15.5	15.1
400	27.4	24.2	22.1	20.6	19.5	18.6	17.9	17.3
500	32.7	28.5	25.8	23.8	22.4	21.2	20.2	19.5
600	38.0	32.9	29.5	27.1	25.3	23.8	22.7	21.8
700	43.4	37.5	33.3	30.5	28.3	26.5	25.2	24.1
800	49.0	42.1	37.1	33.8	31.2	29.2	27.7	26.4
900	54.7	46.7	41.0	37.3	34.3	32.1	30.3	28.7
1000	60.7	51.3	45.0	40.9	37.5	34.9	32.9	31.2

Note: Maximum percentage of CO₂ for condition of zero excess air is 13.01%.



Effect of soot on boiler output at constant stack temperature (600° F) as reported in "Effect of Soot on the Rationing of an Oil-Fired Boiler," Nat'l Bureau of Standards.

EVERY heating contractor appreciates a furnace should be cleaned during the summer season when the check-up is made and, for highest efficiency, the furnace should be cleaned as many times during the heating season as is necessary to keep the soot accumulation to a minimum. The number of times a furnace will have to be cleaned will depend upon the type of fuel used, the draft in the chimney, the combustion rate, and the method of firing.

Cleaning has been advertised to home owners on the basis that a good clean furnace will reduce the fuel consumption up to 20 per cent of the amount of fuel used when the furnace is full of soot. There is no laboratory proof that such a saving can be made. Contractors, therefore, should not make claims for 20 per cent fuel reduction when the furnace is cleaned.

The tests conducted at the Bureau of Mines (report of investigation 3272) indicate that the decrease in heat transmission and efficiency caused by the soot formation on heating surface is destructive to highest efficiency. Says this Bureau of Mines report:

"(1) The test showed that in round boilers with three intermediate sections—that is a ratio of effective secondary to total heating surface of about 0.4—operated at the average rate for a heating season, the insulating effect of deposits of soot decreased the heat absorbed by the boilers two to seven per cent of the heat made available by the fuel, depending upon the thickness of the soot deposit.



"(2) The losses expressed as a percentage of the coal burned will

Furnace Cleaning

be less and will be approximately proportional to the overall efficiency. Thus with 60 per cent efficiency about 1 1/4 to 4 1/4 per cent of the coal will be wasted because of the insulating effect of the soot.

"(3) These values do not include the waste of fuel that will result from incomplete combustion due to insufficient draft caused by the soot clogging the passages of the radiator or flue. These values usually will be much greater than the loss caused by the insulating effect."

Stoker Fly Ash

Contractors should pay particular attention to soot accumulations in stoker-fired furnaces where, in the Research Residence investigations disclosed that during a typical heating season some of the furnace horizontal passages were covered with a layer of fly ash from three to four inches in depth. Such accumulation may have a much greater effect in reducing efficiencies than the relatively thin layers of soot referred to in the Bureau of Mines report. Soot and fly ash removal should be a regular part of the annual inspection of the furnace, particularly in those cases in which chimney draft is weak. (See discussion on chimney draft.)

Bonnet "Limit" Control

MANY gravity systems have only the damper motor and the thermostat. Such installations should be modernized by including a high limit switch in the thermostat-damper motor circuit, set to close the draft door whenever the temperature in the bonnet exceeded a pre-selected temperature. The purpose of this second control was to prevent room temperature overrun and to close the draft before the thermostat is satisfied so that where a heavy fire is going, the furnace will start to close down and the temperature and combustion be stopped before the thermostat is satisfied. Research Residence tests show a fuel saving of at least 4 per cent with a limit control.

Where a high limit control is installed already, the contractor should check the temperature setting and lower the setting to some point near 200 degrees. If the check is made in the summer with the furnace cold, little can be done to check the setting other than to change the setting to approximately 200 deg. and perhaps call back or explain to the owner how the instrument can be changed after the heating season starts.

In many old systems, the high limit switch was installed merely as a safety device and was set at 300 or 350 or even 400 degrees. At such a setting, this instrument never operated and therefore can't save any fuel.

**Check
TO SAVE FUEL!**

House Insulation

SINCE a good insulation job can be purchased on an extended payment plan, and since insulation both decreases fuel consumption and increases comfort in summer and winter, the advantages of insulation to the owner are obvious.

For the purpose of estimating the approximate fuel saving which may be expected when insulation is applied to a given system, the figure accompanying probably gives as fair and complete a picture as any illustrations published.

Fig. 65, from the University of Illinois Engineering Experiment Station Circular 26, shows the calculated heat losses for a typical

Case	Insulation Wall Ceiling	Weather Strip	Storm Sash	Calculated Hourly Heat Loss in Per Cent of Maximum Rate	Reduc- tion, %					
					0	20	40	60	80	
a	None None	None	None	100	100	100	100	100	100	0
b	1-in. None	None	None	12.8	12.8	12.8	12.8	12.8	12.8	12.8
c	2-in. None	None	None	17.4	17.4	17.4	17.4	17.4	17.4	17.4
d	3-in. None	None	None	19.7	19.7	19.7	19.7	19.7	19.7	19.7
e	3½-in. None	None	None	20.3	20.3	20.3	20.3	20.3	20.3	20.3
f	None 1-in.	None	None	11.3	11.3	11.3	11.3	11.3	11.3	11.3
g	None 2-in.	None	None	13.3	13.3	13.3	13.3	13.3	13.3	13.3
h	None 3-in.	None	None	14.1	14.1	14.1	14.1	14.1	14.1	14.1
i	None 3½-in.	None	None	14.5	14.5	14.5	14.5	14.5	14.5	14.5
j	3½-in. 3½-in.	None	None	34.8	34.8	34.8	34.8	34.8	34.8	34.8
k	None None	Yes	None	9.8	9.8	9.8	9.8	9.8	9.8	9.8
l	None None	None	Yes	31.3	31.3	31.3	31.3	31.3	31.3	31.3
m	3½-in. 3½-in.	None	Yes	66.1	66.1	66.1	66.1	66.1	66.1	66.1

FIG. 65. CALCULATED HEAT LOSSES FOR TYPICAL RESIDENCE

(U. of I. Eng. Exp. Sta. Circular 26, p. 109)

residence when each type of heat conservation measure, such as insulation, weatherstripping, storm sash, are added to the building. In this case the tests were run on the Research Residence. Later tests made in the Research Residence indicate that a factor of safety should be applied to the calculated reduction in heat loss, in order to obtain a reasonable estimate of reduction in fuel consumption.

The National Mineral Wool Association recommends that calculated reductions in heat loss be reduced 20 per cent for safety. For example, Item M in Fig. 65 gives a calculated reduction of 66.1 per cent with full thickness insulation applied to the side walls and ceiling, and with storm sash applied to all windows. Reducing this value by 20 per cent gives an estimated fuel

reduction of 0.8×66.1 or 52.9 per cent. This is in reasonably good agreement with the actual heat loss test made in the Research Residence.

Fig. 65 indicates that certain heat conservation measures give the owner a better return on his investment than do other measures.

It is interesting to note in Fig. 65 that the single greatest fuel conservation measure which the home owner can make is to install tightly fitting storm sash and doors on all windows and doors. This is indicated by Case L, which shows a total saving of 31.3 per cent for storm sash and doors. Complete storm sash and doors may not be as cheap a measure as insulation in the top floor ceiling, but this will have to be determined by actual estimate of the heat loss.

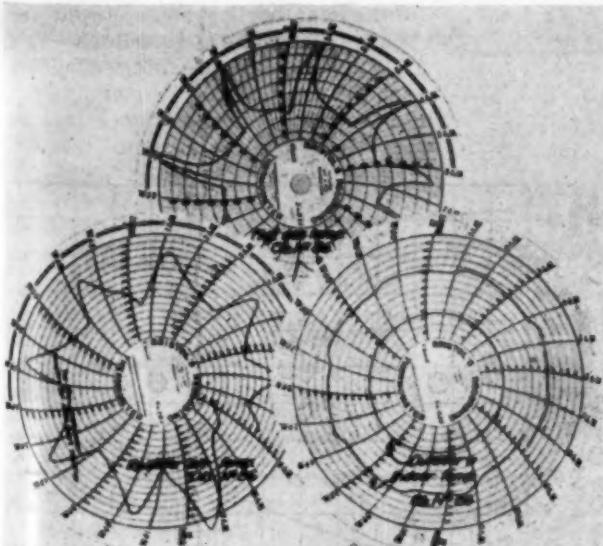


FIG. 262. ROOM, REGISTER AIR, AND FLUE-GAS TEMPERATURE RECORDS FOR SINGLE CONTROL.

In reading the Register Air Temperature chart deduct 50 deg. F. from the chart figures.

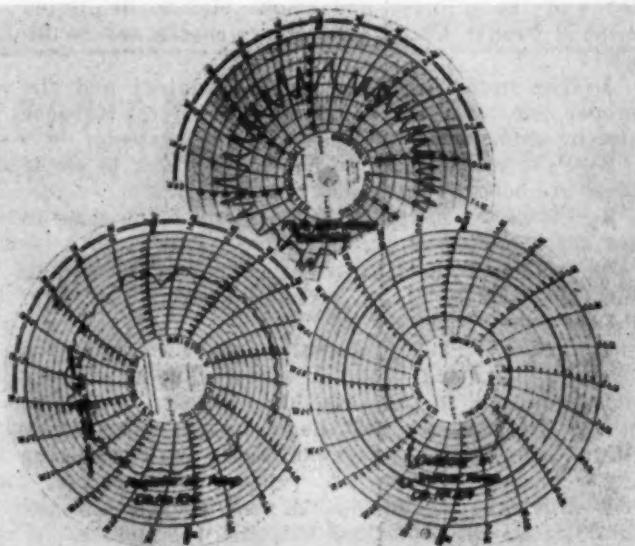


FIG. 263. ROOM, REGISTER AIR, AND FLUE-GAS TEMPERATURE RECORDS FOR DUAL CONTROL.

In reading the Register Air Temperature chart deduct 50 deg. F. from the chart figures.

Chimney Draft

POOR chimneys are an ever present cause of poor combustion efficiency and of unsatisfactory furnace operation. Since the purpose of a chimney is to produce combustion draft through the furnace, the chimney, first of all, should be checked to see what the draft is. Too little draft prevents necessary combustion; too much draft requires some checking method to reduce over-run in room temperatures caused by combustion continuing beyond the necessary combustion period.

In the case of hand-fired coal furnaces, investigations show that the draft reading over the fire should be at least 0.12 inch of water on the draft gauge and preferably 0.15 inch.

If anthracite is burned, particularly in small sizes, greater draft will be required.

In the case of stoker-fired furnaces with bituminous coal the draft should be at least 0.05 inch of water.

In the case of gas burners and gun-type oil burners, the draft may be as low as 0.05 inch, but for vaporizing type oil burners the draft should be 0.06 to 0.08 inch of water.

If the draft gauge reading over the fire does not show these drafts when the fire is burning briskly, then the chimney is at fault and should be remedied.

Reasons for poor chimney draft briefly are:

Chimney is too low, chimney is obstructed from certain directions by adjoining buildings or trees, there are leaks in the flue, flue is obstructed, the flue is under size.

If the draft gauge shows insufficient draft for combustion at the proper rate, then a quick check can be made of the chimney and smoke pipe to determine what is wrong. Certain customary checks are as follows:

1—The proper chimney height required and the proper flue size can be compared with the furnace size by using the two tables which accompany.

2—Poke the smoke pipe with an ice pick to see if there are holes or rusted out metal.

3—Check the ashpit draft door and firing door to see if these doors fit tightly.

4—Is there a water heater or a fireplace vented into the furnace flue? If so, blocking these off may gain the necessary draft.

5—Inspect chimney mortar joints with a lighted candle; if the flame is sucked into the flue or chimney with fire in the furnace, the chimney leaks.

6—Insert a hand mirror at the base of the chimney through the clean-out door and see if you can see the sky.

7—Does the smoke pipe thimble project into the flue? If so, cut it off flush with the flue surface.

8—Always check to see that there is sufficient air for combustion; a too tight basement will not provide sufficient air for combustion.

Flue temp at collar Degrees.	Average temp. in chimney Degrees	Draft per foot of flue height in inches of water			
		Outside Temperature			
		At 0 Deg.	At 30 Deg.	At 50 Deg.	At 70 Deg.
300	100	.00216	.00114	.00053	.00009
450	200		.00333	.00272	
500	200	.00435	.00345	.00280	.00255
650	300	.00580	.00494	.00433	.00380
700	300	.00596	.00500	.00450	.00385
800	400	.00680	.00600	.00540	.00500
850	400	.00700	.00618	.00557	.00515
900	400	.00720	.00630	.00570	.00525

This table shows chimney draft per foot of chimney height at selected outdoor temperatures and smoke pipe temperatures.

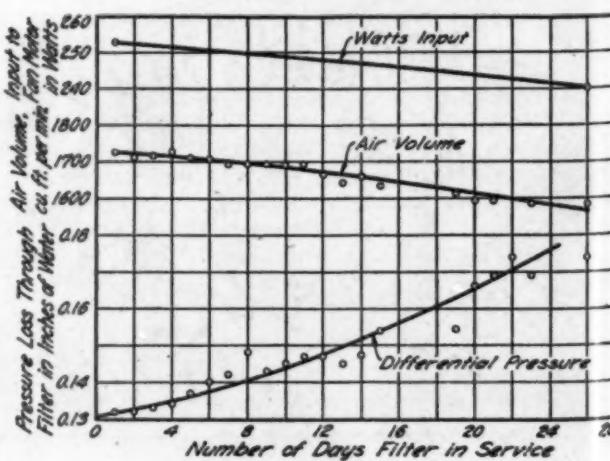
Sq.Ft.of grate in furnace	Lbs. coal at 5 lbs. per hr.	Inches Draft at 5 lb.rate	Lbs. Coal at 3 req'd per hr.	Inches Draft at 3 req'd per hr.	Height of Chimney above Grate		
					25 ft.	30 ft.	40ft.
					Draft of Chimney in Inches of Water at an assumed temp. of 300 degrees	.155	.179
1.22	6.1	.177	3.6	.151	minimum inside size of chimney		
1.97	9.8	.189	5.9	.154	6x6	6x8	
2.64	13.2	.192	8.	.158		6x8	9x12
3.17	15.8	.195	9.5	.162		6x8	9x12

Minimum chimney liner sizes required for 26, 30 and 40-foot chimneys to burn coal at 5 and 3 pound combustion rates at the minimum smoke pipe temperature of 300 deg. (Both tables prepared by L. W. Millis of Security Stove & Mfg. Co., Kansas City.)

The Filters

FILTERS for cleaning the air ordinarily are a part of the original forced warm air system. Many home owners have removed filters and permit the air to circulate without cleaning. In too many cases, a schedule for checking the condition of the filters and installing new filters would be definitely beneficial to the home owner because clean filters guarantee—

1. Maximum cleaning efficiency in the air.
2. Minimum resistance to air flow through the system.



Check TO SAVE FUEL!

The condition of the filters can be very readily determined by visual inspection. If the filter surface is completely matted and if the filter is packed with dirt and lint from surface to surface, then the filters either should be cleaned if they are of the cleanable type, or should be replaced.

For the purposes of explanation to the customer, the result of a service test made over a period of 26 days of continuous operation is shown in Fig. 1. In this case, the fan was operated intermittently under control of the room thermostat in response to the heat demand on the house. Fig. 1 shows vividly that there is a progressive increase in the resistance of, or the pressure drop through, the filter as the 26 days of the test passed. In the 26-day test, the pressure drop increased from 0.13 inch of water to 0.18 inch of water or an increase of 38 per cent.

In terms of air delivery, with the fan operated at constant speed, the volume of air delivered decreased from 1,725 cfm. to 1,575 cfm., or a decrease of 9 per cent.

The effect of dirty filters can be explained to the home owners as follows:

1—The increase in filter resistance imposes a larger resistance on the fan which decreases fan air delivery.

2—This decrease in fan delivery will in most types of fans unload the motor so that the electric power requirement for the motor will be smaller.

3—The decrease in air volume through the furnace will tend to increase the register air temperature, resulting in shorter cycles of operation.

4—When the filter resistance gets high enough, the complete system will be unbalanced and poor heating results will follow.

Casing Insulation

IN CHECKING a heating installation for possible ways to increase efficiency and comfort, consideration should be given to the possibilities of obtaining greater efficiency and capacity from the furnace by insulating the casing and bonnet and by placing a liner in an unlined casing (sometimes missing in old furnaces).

The results found in the Research

Residence are shown graphically in the accompanying Fig. 99. Note that at average winter combustion rates (4 pounds of coal per hour per square foot of grate area) efficiency is increased about 6 per cent and capacity about 3 per cent when the casing is insulated.

Capacity-wise at 4 pound rate the increase is about 5,000 Btu. per hour.

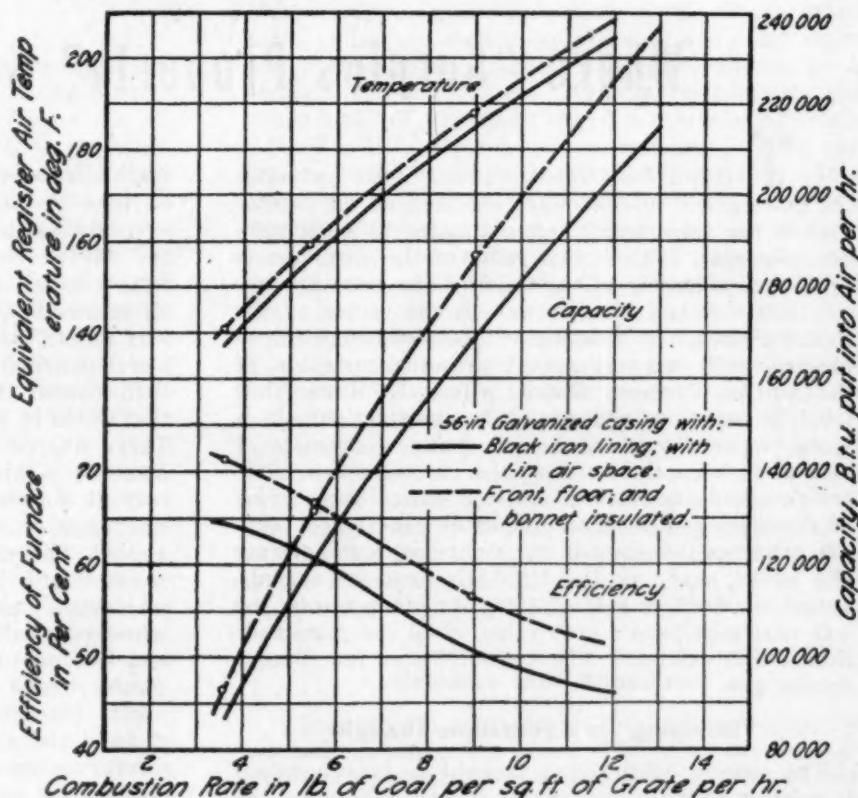


FIG. 99. PERFORMANCE OF INSULATED FURNACE

Heating Controls

AT a meeting of the Fuel Conservation Council for War, Automatic Controls Industry, (June 21) of which M. W. Crew, Perfex Corporation, Milwaukee, is Chairman, and C. W. Nessell, Minneapolis-Honeywell Regulator Company, is Secretary, it was reported that twice the amount of materials for the manufacture of controls that was used last year will be available for the balance of this year but inasmuch as the demand for these controls has also more than doubled, they will continue to be scarce. According to WPB, controls will be available for repairs

and controls for original equipment on furnaces, oil burners, and stokers should also be available. The scarcity will probably affect, therefore, those sales of controls for heating plants not now equipped but every effort is being made to supply the dealers with them.

It was announced that in the third quarter of this year some 35,000 oil burners will be manufactured and more than this number in the fourth quarter. Domestic stoker production will probably be higher than these figures. An unknown but large number of con-

(Continued on page 128)

Arnold Kruckman's

Washington Letter



Where "Surplus Property" Stands Today

THE Surplus Property Board itself estimates the gross grand total of war surpluses, at the rate of cost to the Government, approximates \$100,000,000,000. Roughly, the original value of the surpluses is equal approximately to one-third of the total sum we calculate the cost of this war to the people of the United States. The meaning of \$100,000,000,000 is so inconceivably staggering that the Administrator of the Surplus Property Board, Alfred E. Howse, has tried to make us understand its implications, in a recent report, by the statement that the estimate of cost is equal to a third of the value of "*every man-made article—from the smallest pin to Boulder Dam—which this country contained less than ten years ago,*" actually, what we possessed in some physical form, private and public, man, woman, child, Government or individual, in the first half of 1936. In other words, the war surpluses have a cost value of *all* the man-made things that existed in the United States less than a decade ago.

"Dumping" Is a Fearsome Thought

The concept behind that thought is so stupendous in relation to the surpluses that it rather frightens the thinking business man when he ties it up with what might happen if only a fraction of that total were to be permitted to break like a tidal wave upon the economy of the United States. In Congress the other day Senator Thomas, of Utah, hinted at the effect by citing what happened to those who sold blankets in regular commerce at the time of the end of the first world war. The Army and Navy dumped blankets through retail stores, apparently owned by private persons, which were called Army and Navy Stores, and the blankets as well as other surpluses were sold in such quantities and at such prices that some manufacturers and retailers went bankrupt. Obviously no one wanted to cause any regular established business to go bankrupt, but just as obviously there had been little study and thought expended upon the effect of the dumping when the surplus got into the hands of business guerrillas.

There are some indications that the problem has not been thought through by some official sources to any greater extent at this time, even though the quantities involved now might be regarded as an ocean in comparison with the pond of surpluses of 1918. The other day the members of a firm of mid-western manu-

facturers came to Washington to find out what the Surplus Property Board had in mind in connection with the product the firm had made and supplied to the Air Forces. It apparently was an appliance of wide general use in ordinary life. The firm had made an enormous quantity for the Air Force. The surplus was great. The program seemed to be to release the merchandise through one of the disposal agencies in such manner that it would reach the public at a price that would be less than the actual cost of manufacture. There was no sinister purpose behind the plan. The planners sincerely felt the surplus could be moved only at a great sacrifice to realize some return for the taxpayer, and that this is a good time to find a market. The manufacturers presented their arguments to the Board. They asserted that if the stuff were sold as planned their firm would be bankrupt in five years, wiped out, with loss of jobs to a number of workers, and loss of substance to a community of stores and service trades that depended upon the health of the plant. The official with whom they negotiated was shocked and sincerely distressed but he could find no answer except the thought that it is inevitable some people must suffer when we slope back to non-war life.

Terminated Contract Surpluses

In the West there is a firm which has fabricated a number of metal articles which are in standard use by the arsenals and plants which produce for the armed services and other direct war services. Not long ago it was startled when a middleman walked into its offices and offered for sale at low prices a substantial quantity of the equipment the firm makes for Government. The middleman quoted a price that was lower than the price at which the firm could sell for a profit to its clients. Despite this discrepancy it was logical to assume the middleman was selling at a profit. The Western firm was in somewhat the same quandary that assailed the midwestern people. The Westerners investigated. They found the Surplus Property Board had nothing to do with the transaction. The equipment had been part of the settlement that came to a war production unit when the termination of a war contract had been concluded. The equipment belonged to the cutback war contractor, and it was his privilege obviously to sell his assets to whom he pleased at any price he pleased.

These instances can be marshalled ad infinitum.

They point to the fact that the situation definitely is not under control, and that with each day's added volume of war surpluses there is a pressing need for a formula, or formulae, that will regulate the flow of surplus materials into competition with the economy of the nation, so that the industries and mercantile units everywhere will not be maimed or killed. It would be the height of a fantastic political nightmare if the commercial competition of a Government with the people who pay for the Government, were to wipe out the business that supports the people who support the economy that pays the expenses of the Government. There are many people in Washington who feel it would be the ultimate wisdom to pitch the greatest part of these surpluses into the ocean and forget them.

Disposal Has Lagged

There is some of this indecision and uncertainty behind the dragging slowness with which the Surplus Property Board is getting into action. The whole adventure into disposal of surpluses has been so reluctant on every side that it makes one think old Nature herself may have put the breaks on the operation. It seems literally true that no one really knows what to do about it, and that very little is being done. The latest report of the Surplus Property Board reveals that during the past twelve months surplus property, having an original value of \$357,000,000 has been sold for \$196,513,000. There was a time, not long ago, when the sum of \$200,000,000 was significant in public discussion; but these days, with \$100,000,000,000 to throw away, it is relatively picayune.

It is illuminating to learn that only \$1,936,000,000 worth of surplus has been offered for sale through the Surplus Property Board the past year. The things that have the greatest sale are consumer goods, machine tools, construction materials, and small vessels. The turn-over at present is going along at the rate of \$40,000,000 a month. Maj. Howse reports: "Consumer goods—No other class of surplus commands so ready a sale in this period of short supply, or arouses so wide public interest. *The policy of first importance in disposing of these goods is that it be done quickly.* Prompt disposal will assist in relieving current shortages, will get the best price for the Government and will clear the way for expanded civilian production. . . . Meanwhile . . . 68% of all commercial sales of surplus consumer goods have been sales of less than \$500." The report emphasizes the two basic principles of disposal are to encourage distribution at the trade level as near to the consumer as possible, and to sell at a specified price whenever possible.

How Consumers Goods Are Sold

Consumer goods are now sold through the Department of Commerce which was substituted as disposal agency in place of the Treasury Procurement Division. The word in Washington is that the Treasury was anxious to get rid of the responsibility because the legal restrictions made the process of retail selling extremely difficult. In order to comply with the requirements that bids must be made for all things sold, Treasury attempted to dispose of many consumer goods in rural areas by holding auctions that took on the aspect of a county fair or an old-fashioned Fourth of July picnic. The goods sold like hot cakes, but the local hardware stores, furniture stores, and many other establishments were hit so hard that the uproar

stopped the sales. Commerce Department today rigidly compels the system of bidding, even if it involves a paper of pins. But it is expected that the Surplus Property Board in the near future will devise a method by which the surplus can be sold at fixed prices. OPA is prepared to supply a formula for price-ceilings.

"Capital Goods" and RFC

RFC, through its several agencies, sells the capital goods. This raw material, equipment, machinery, and supplies available for fabrication, often laps over into a classification which makes doubtful whether it belongs to RFC or to the Department of Commerce. There are times when both must be consulted. The Commerce Department is a stickler for compliance with Governmental formalities. RFC, on the other hand, is largely staffed by business men, and expedites transactions much as they are handled by a mercantile establishment. It deals realistically, and it has many of the mechanics of a business establishment. The RFC group have even managed in some way to provide the means by which a purchaser can establish credit and buy on terms.

It is in Defense Supplies Corporation, or Defense Plant Corporation, both parts of RFC, where you may buy sheet metal and strip. The monthly reports of sales and inventories list quantities of metal. The schedules show where the material may be obtained. There are odd lots and odd sizes, and it is advisable if feasible to arrange to have somebody in the know to run down the sizes you specifically require. There is now growing up a group of intermediaries outside of Government who are able to give special service in running to earth the particular kind of sheet metal you may need. These service agents apparently are proving their worth. They are able to ferret out materials and things of all kinds in places where they might never come to the notice of the man who wishes to buy.

Re-enter the "Expediter"

If you wish to take advantage of whatever may be available as surplus it seems wise under present circumstances to hire the guidance of a good service expediter. The whole system of surplus disposal at present is badly muscle bound. It not only is "all bound round" with red tape, but it is hobbled by bewildering conflict in the Law and by conflicts among those who are vested with the responsibility of making the Law function. In addition, an extraordinary number of agencies and persons and institutions have special preferences as purchasers. Before the ordinary citizens may buy, a period of time must elapse while all Federal Government agencies make up their minds if they wish to exercise their priority to buy; and after the Federal agencies come the priorities of the 48 States, the District of Columbia, and the Territories and Possessions. Then come the priorities of cities and towns and counties, and after them come the institutions. Maj. Howse estimates there are 258,000 of these units which have the right to buy before the next class of preferential customers. They are the veterans, in all their great numbers; and the small business men, who run into hundreds of thousands; and the farmers, who number millions. Under the Law the Surplus Property Board also must be careful not to trespass upon the legal privileges of

(Continued on page 134)

Interpretations, Amendments, Easements To Existing Orders

L-79 Remains in Force

To maintain an even flow of plumbing, heating and cooking equipment, retention of the order governing distribution of this equipment (L-79) has been recommended by members of the Plumbing and Heating Distributors Industry Advisory Committee. The recommendation was accepted by WPB.

CMP-9A for Motors

REPAIRMEN using the ratings assigned by Controlled Materials Plan Regulation 9-A or a service organization operating under Order P-126 may employ the ratings to get motors repaired, rewound or rebuilt if they are used in such household products as oil burners, coal stokers, etc., or in commercial refrigerating systems despite provisions of paragraph (f) (2) (iii) of Priorities Regulation 3, the War Production Board ruled. The action was taken by issuing Direction 5 to CMP Regulation 9A (Parts and Materials for Repairmen). Order P-126 governs material for emergency servicing of commercial refrigerating and air conditioning systems.

Z-1, Z-2 Abolished

ALL allotments of materials for the third and subsequent quarters that are identified by the Controlled Materials Plan allotment symbols Z-1 and Z-2 have been canceled, effective July 1.

All preference ratings assigned to production schedules for the third and subsequent quarters that are identified by those symbols applied to or extended to orders calling for delivery after July 1, 1945, also have been canceled. The order was contained in Direction 73 to CMP Regulation No. 1.

Consumers who have received authorized production schedules identified by the symbols Z-1 and Z-2 must, immediately, cancel any use they have made of these allotments for the delivery of A products or controlled materials in the third and subsequent quarters, and any use of the preference rating for the delivery of other products or materials. Suppliers are also directed to disregard ratings and allotments so identified.

Direction 3 to Order M-21-b-1 has been revoked and steel producers and warehouses must, effective July 2, treat all ZW orders as unrated orders.

No More Ratings Under PR-25

FIELD offices of WPB have been instructed not to assign preference ratings or make allotments of controlled materials under Priorities Regulation 25, the "spot authorization" order, beyond July 1, 1945.

This action has been taken in anticipation of an amendment of PR-25, which will eliminate all such assistance under the order, effective July 1. Pre-

viously, the order permitted assistance for non-military production even above the minimum essential production scheduled by WPB, if local conditions permitted and the production did not interfere with the war effort.

WPB field offices continued to grant allotments, assign ratings, and authorize production schedules until June 15 in the usual manner, but only for the second quarter of 1945. Such authorizations may be issued after June 15 only if it appears reasonably certain that effective use will be made of the assistance granted before the end of the quarter.

Field offices will authorize no production schedules for the third or fourth quarters of 1945 except for products governed by current orders listed in Direction 1 to PR-25.

Manpower Appeal Amended

PR-16, as amended June 12 now requires the filing of a statement of manpower information (Form WPB-3820) only where an appeal from an order or regulation relates to production in a Group I or Group II labor area and the production will take place in an establishment whose total number of production workers will be more than 100 if the appeal is granted.

"Reusable" Steel Prices

REVISION of dollar-and-cent shipping point ceiling prices for "reusable" iron and steel products suitable for use without further reconditioning is announced by OPA.

The new ceilings, which became effective June 26, 1945, are as follows:

For structural shapes, plates, bars, rods and flats, shafting, black sheets, and miscellaneous products, \$3 per 100 pounds in quantities up to 1,999 pounds and \$2.50 per 100 pounds in quantities of 2,000 pounds and over.

For coated sheets, \$3.35 per 100 pounds in quantities up to 1,999 pounds, and \$2.85 per 100 pounds in quantities of 2,000 pounds and over.

For all reusable iron and steel products except wire rope and wire products that require reconditioning, a maximum shipping point price of \$2.10 per hundred pounds in any quantity is established.

When a buyer asks that holes be drilled or punched in reusable material, the maximum drilling charge that may be made is 10 cents per hole. No extra charge, however, may be made for cutting material to lengths. Any welding, bending, or cutting to diameter or pattern is fabrication, and maximum prices for items that have been welded, bent or cut are those already established for fabricated structural steel shapes, plates and bars. Maximum prices for the service of fabrication on iron and steel products not owned by the seller are established under Maximum Price Regulation 581—Industrial Services.

Maximum delivered prices for reusable products are
(Continued on page 134)

NEWS SUMMARY OF THE MONTH

Permissible Sheet Inventory

AN immediate 25 per cent slash in the permissible inventories for sheet and strip steel has been ordered by the War Production Board.

The permissible inventory for sheet and strip steel has been reduced from 60 days' to 45 days' supply, effective July 9 through the issuance of Direction 24 to CMP Regulation No. 2. The direction carried the usual WPB protection for the small customer by allowing consumers with a monthly use not exceeding 25 tons to carry up to a 60 days' supply. All other sheet and strip steel users must, by July 9 cancel, reduce or defer any orders which have been placed, where the scheduled delivery would result in an inventory in excess of 45 days' supply.

Other steps to stop steel chokepoints include: (1) Investigations by WPB's field staff of steel users' inventory and purchase order positions, particularly sheet steel. (Compliance action will be instituted where necessary against all violators of WPB regulations); (2) More effective use of manufacturers' inventories of idle and excess sheet and strip steel; (3) Increased sheet and strip steel production from (a) present facilities based on a War Manpower Commission labor recruiting drive for 2,000 men, (b) proposed expenditure of \$55,000,000 by private industry for new flat rolled finishing facilities; and (4) a rescreening of all third quarter and proposed fourth quarter steel allocations to adjust CMP tickets to the needs of a one-front war.

WPB reports that according to the best estimates to date, reconversion will require during the next four months about 350,000 tons of sheet and strip steel of the gauges that are presently in short supply. During these four months, the steel industry will produce at present production rates, about 2,400,000 tons of these gauges. With 2,000 additional men recruited for the sheet and strip mills, an additional 80,000 tons per month, or 320,000 tons for the four months, could be produced with present facilities—nearly enough to take care of all reconversion needs. All hot strip mill units formerly rolling plates have been returned to full production of sheets subject only to (a) limitation on sheet finishing capacity and available manpower and (b) those plate requirements that cannot be produced in other than strip mills due to requirements for extra-deep drawing and pickling.

Pig Iron Controls

CONTINUATION of the controls on pig iron has been unanimously recommended by members of the Pig Iron Industry Advisory Committee after consideration of the tight inventory position. Most controls on pig iron are currently incorporated in M-17.

WPB officials point out that if M-17 were revoked at this time, the steel Order M-21 still would give WPB authority to allocate pig iron wherever necessary, but that the latter order does not contain the 30-day inventory restriction, continuation of which is

considered necessary at this time.

Pig iron production for the first five months of 1945 dropped 1,722,035 tons from the comparative 1944 period to 21,572,938 tons.

Consumption continued slightly in excess of production as indicated by April demands of 4,297,034 tons of pig iron as compared with 4,195,914 tons produced. Only 200 furnaces were in blast on pig iron in the middle of June, with 13 down for relining, and 13 others idle as a result of various factors, WPB reported.

July Materials Situation

IMPROVEMENT in the supply situation for construction materials and components may be expected within several months, but the effect of the end of the European war is not yet apparent in current supply, says WPB.

Present availability of construction materials as summarized follows:

"The steel situation at the moment seems to be improving so that civilian items may find room in the third quarter rolling schedules. However, the fabrication and distribution of end products will add weeks or months before the finished items will be available. While it has been possible to relax somewhat the provisions of L-41 to permit more construction, most construction must still be deferred until a freer flow of products is established and the manpower supply, transportation facilities and distribution details are in shape to handle any increased demand for building materials."

STEEL—Structural steel, plate, reinforcing bars are somewhat easier. Sheet and strip continue tight. Reinforcing mesh tight. Warehouse stocks, except sheet and strip, fair to good.

ASPHALT ROOFING—Production is in general meeting essential demands, though increasing demands may change present delivery schedules.

PLUMBING—Important changes during the past month. Restrictions on production and on metal uses removed. Substantial increase in available products anticipated by third quarter.

HEATING EQUIPMENT—Equipment stocks, in general, are in short supply but obtainable, subject to varying delays.

BRASS AND COPPER GOODS—In improved position, and should soon be in available supply.

Stoker Situation

AT the last meeting of the Stoker Manufacturers Industry Advisory Committee the following situation was reported:

The casting situation is easing up slightly, the bearings situation is still critical, controls are not too tight and most members stated that they were getting enough feed worms for their industrial sizes but are experiencing difficulty in obtaining feed worms for domestic sizes, particularly for repairs.

Most of the Committee members were of the opin-

ion that their production in the third and fourth quarters would be approximately double their production for the first and second quarters of 1945. The first quarter production was 17,000 stokers, and members estimated that second quarter production would be about 25,000 units, third quarter 35,000 and fourth quarter 45,000, which would make a total production for the year of approximately 120,000 stokers, or 60% of normal production.

Members said that one factor which limited production in the first quarter was lack of motors. Members explained that they were unable to obtain the motors authorized. They also stated that labor shortages and difficulty in obtaining grey iron castings were other limiting factors in first quarter production.

Third Quarter Sheet Freeze

THE "freezing" of third-quarter steel rolling mill order books for certain types of sheet and strip steel was announced July 5 by the WPB.

Steel products affected by today's announcement are:

1. Plain hot rolled sheet and strip, 16 gauge and lighter.
2. Hot rolled pickled sheet and strip, all gauges.
3. Cold rolled sheet and strip, all gauges.

The "Transition" Period

PRELIMINARY details of the revised and simplified priorities system leading to ultimate discontinuance of priorities assistance for "virtually everything except military requirements" as soon as war-supporting and essential civilian production no longer needs general help, are announced by the WPB.

There will be a six months' transition period from July 1 to December 31, 1945, to "give business an opportunity to adjust its operations to the new system," which will go into effect after January 1, 1946.

The new priorities system will be introduced gradually during the period from July 1 through December 31, 1945, which will be known as the "transition period." This period is designed to cushion the impact of the transition from a system under which nearly all production has been regulated to a new system under which military requirements will have top priority but civilian business will generally operate both without production restrictions and without affirmative priorities assistance.

Meanwhile the procedures outlined in the new "Priorities Regulation No. 29" will be instituted gradually during the latter half of 1945. There will also be changes in other WPB regulations and orders, should there be any inconsistency between PR 29 and any other WPB regulation or order, PR 29 controls "unless the other expressly states the contrary."

Under the new priorities rating system the present AA rating method and the Controlled Materials Plan will be discontinued by the end of 1945 and replaced by a system in which the AAA rating will still be assigned in emergencies as under existing procedures, but a new MM rating will be assigned by military agencies. WPB itself will assign the MM rating only in cases where it is clearly necessary for the war.

During the transition period from July 1 to December 31, the MM rating will be equivalent to AA-1. The AA rating also will be retained for certain materials,

4. Galvanized sheet, all gauges.

5. Silicon sheet and strip, all gauges.

Through this closing of the books, no steel producer can accept any new third-quarter orders for sheet or strip.

By this means, WPB said, it is planned to obtain concrete information regarding all open spaces on mill schedules for these products. Open spaces are expected to result from military cancellations and the recently ordered reduction in permitted inventories of sheet and strip from 60 days' supply to a 45-day supply as required by Direction 24 to Controlled Materials Plan Regulation No. 2.

WPB reported that telegrams were sent on July 4, 1945, to all mills producing sheet and strip, requiring the mills to report to WPB's Steel Division each week on the cancellations of all outstanding orders to be produced in the third quarter of 1945. These orders must be listed by the month for which the orders are scheduled for production and in the grades listed above.

The telegram also stated that the mills cannot accept any new orders for these specified grades for third-quarter production.

As soon as the full effect of this action is evident and open space is apparent, the order books of sheet and strip producers will be reopened for acceptance of orders, WPB said.

such as textile, if it is not practicable to adapt existing controls to the new system.

Beginning October 1, 1945, no more AA ratings will be assigned by WPB or other agencies except for deliveries to be made before January 1, 1946. Prior to October 1, 1945, WPB will cancel outstanding AA ratings calling for delivery after the end of 1945, whenever this can be done without interfering with war production or war-supporting activities. Further details on this phase of the transition will be announced later.

Beginning as soon as possible after July 1, 1945, the military services will assign the MM rating to orders and contracts placed during the transition period for deliveries during or after the transition period. They also may change existing orders with AA ratings to MM ratings if necessary to assure delivery.

WPB will, if necessary, provide additional procedures to give priorities assistance for war-supporting or highly essential civilian purposes. This may be in the form of a new rating junior to the MM rating or in the form of some other procedure. This will not be announced until more information is available as to the supply of materials for non-military use.

At the end of the transition period, December 31, 1945, the Controlled Materials Plan and all its regulations will expire automatically, except that part of it which restricts inventories. However, the delivery of controlled materials during the third and fourth quarters of 1945 will continue to be regulated by the plan alone and not by ratings.

Regular applications for allotments will be usually required for the fourth quarter of 1945 for production materials for Class B and unclassified products. Regulations for maintenance, repair, and operating supplies will remain in effect through December 31, 1945, and after that date ratings will generally not be given on a blanket basis.

RESIDENTIAL AIR CONDITIONING

S E C T I O N



DEVOTED TO HOME AND SMALL COMMERCIAL AIR CONDITIONING

W

FOR REALLY CLEAN WARM AIR HEAT

Waterbury

GASTITE FURNACE

A quality furnace at a moderate price. It just fits the needs of your good medium prospects; the home-owners from whom your volume sales come.

IN THIS FURNACE WATERMAN-WATERBURY COMPANY OFFERS ALL THOSE FEATURES MOST WANTED IN A QUALITY FURNACE.

GAS TIGHT—

No possibility of leakage of poisonous gases and dirt into the air stream.

ECONOMICAL—

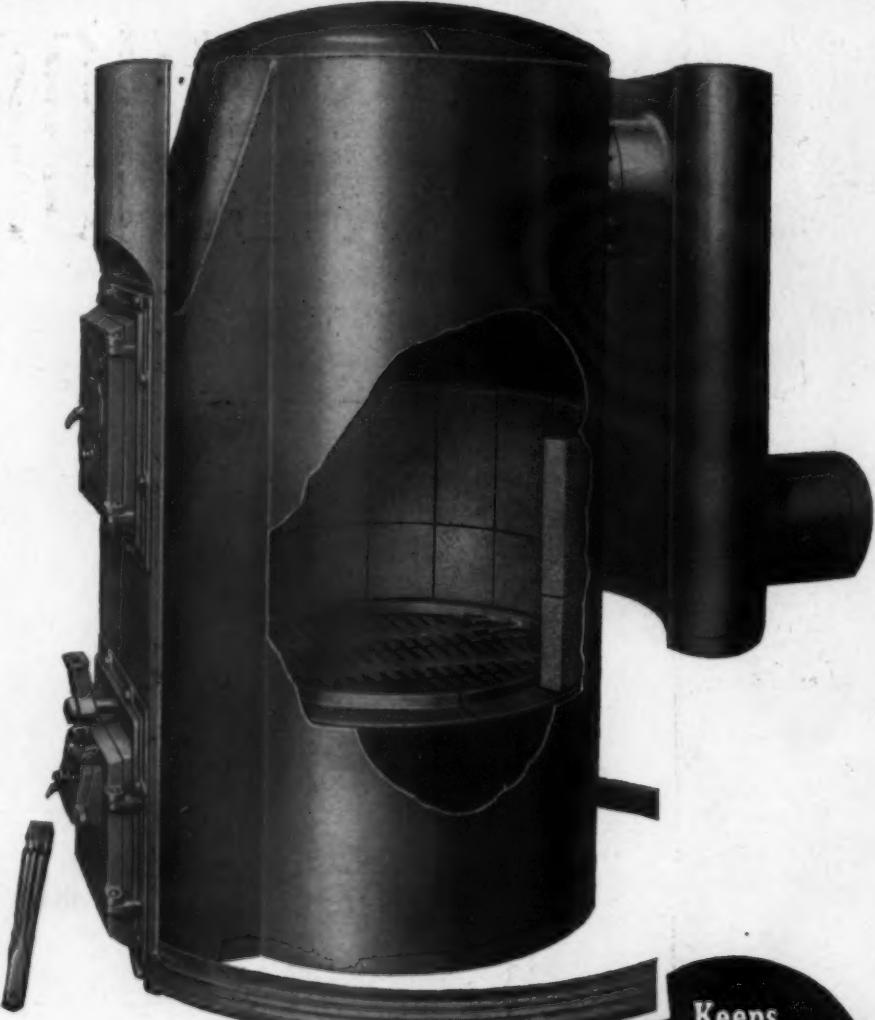
Large heating surfaces—long fire travel—save fuel.

DURABLE—

Made of heavy steel. Welded construction insures long life and permanent tightness.

Under this same brand name we furnish both a gravity and a forced air model, each with the same furnace under the casing.

Right now we can only take care of our established customers . . . but don't forget: IT IS NOT TOO EARLY TO START PLANNING FOR POST-WAR PROFITS.



THE GASTITE FURNACE
MODERATE IN PRICE
HIGH IN QUALITY

Keeps
Gases and
Dust Out of the
Heat
Stream

THE WATERMAN-WATERBURY COMPANY

1122 Jackson St. N. E., Minneapolis, Minn.

NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSOCIATION



Says

You Want Competition?

YES! But how much?

There are two kinds of competition which affect the warm air heating and air conditioning contractor and dealer. One is for the consumer's dollar, which is headed for a new automobile, automatic refrigerator, or some other home utility. The other is competition with heating devices, such as stoves and circulators, and central-fired steam, vapor and hot water systems.

Warm air heating and air conditioning is a "natural" because more than any other heating device, its performance outranks all of its competition. The design of a warm air heating system permits of many benefits which are contributing factors to better health and comfort. With warm air heating and air conditioning systems, real "INDOOR COMFORT" is achieved.

Many people feel that the warm air heating industry "coasted" to a plane of high acceptance because they were riding a "natural," but everyone in this industry knows that along with the "coasting," a lot of research was done by the National Warm Air Heating and Air Conditioning Association in cooperation with the University of Illinois and other factors in the industry to make the "coasting" possible.

The time has come when the warm air industry must remove itself from a psychology of "coasting" to a psychology of telling Mr. and Mrs. U. S. A. the reasons why they will want "INDOOR COMFORT" as compared to a multitude of other devices. A program has been developed by the National Warm Air Heating and Air Conditioning Association for devel-

oping the future of the Warm Air Heating and Air Conditioning Industry. This program, which is being participated in by manufacturers, dealers and jobbers throughout the country, will bring the story of "INDOOR COMFORT" to millions of prospects through a wide list of national consumer magazines, through paid space advertising in full and half page ads, in addition to various promotional materials which will be made available for dealers' use.

Hundreds of dealers, manufacturers and jobbers have subscribed to the proposed program. HAVE YOU? Every dealer who subscribes automatically becomes a member of the Dealer Division of the Association and as such is permitted to display the Association's emblem in various ways.

We urge you, if you have not already done so, to subscribe now. Write to the Association's office for an affiliation blank or make a copy of the following form. Please observe that payment covering your subscription does not become due until the minimum of \$200,000 has been subscribed.

A dealer's subscription is to be based upon the number of furnaces and/or winter air conditioning units sold in 1940 whether for replacement, modernization or new building.

Number of Units Sold in 1940	Amount of Subscription
Up to 50	\$50.00
51 to 100	100.00
101 or more	150.00

Make a copy of this form.

National Warm Air Heating & Air Conditioning Association
145 Public Square
Cleveland 14, Ohio

DEALER'S SUBSCRIPTION AGREEMENT TO THE NATIONAL WARM AIR HEATING AND AIR CONDITIONING ASSOCIATION'S PROPOSED ADVERTISING, PUBLICITY, AND SALES PROMOTIONAL PROGRAM

As a Dealer of Warm Air Heating and/or Air Conditioning products, we agree to subscribe to the National Warm Air Heating and Air Conditioning Association's proposed National Advertising Program the sum of \$..... to cover one year's operation.

This amount has been determined in accordance with the information outlined above in the "Dealer's Schedule." It is understood that this subscription will become payable when the Industry subscribes a total of \$200,000, or more.

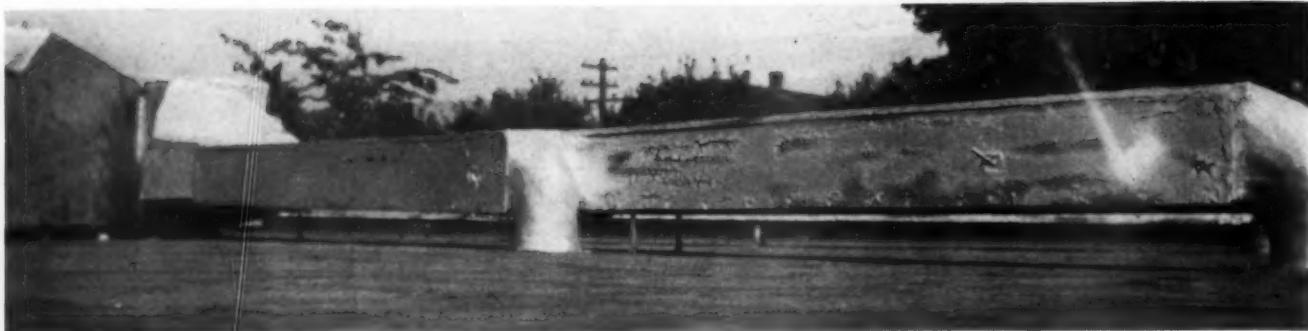
Name of Company

.....

Date

Street Address

.....



Outdoor piping insulated with cane fibre slab insulation on wood framing. Elbows insulated with asbestos cement applied by hand. A second duct line shows just under the front duct.

Insulation Methods For Outdoor Piping

By R. C. Nason

INSULATION for exposed air conditioning ducts includes fibrous sheeting, cork, cement and like materials. Most of these have been tried at various times by sheet metal contractors. According to the experience of Demuth Sheet Metal Works, Jamaica, L. I., good results at minimum installation cost can be obtained with fibrous slabbing, or sheeting. This contractor also has a more or less novel way of applying it and cites as an example a recent project wherein both trunk duct and branches were run close to the roof surface.

A. Demuth, proprietor, points out that exposed ductwork often has to be used in connection with renovizing work due to unwillingness of owners to permit interior construction cutting and objection to the unattractive appearance of interior exposed sheet metal. Consequently, in the instance here noted, the contractor placed his cooling plant on the roof and ran his ducts also over the roof to locations of rooms to be cooled, then cut through roofing and ceilings to connect air distributors. He points out that such roof-located ducts offer no serious problems other than insulation and weather protection.

Stiff Board Application

On this job Demuth employed stiff cane-fibre insulation board $1\frac{1}{2}$ in. thick and covered the elbows with hand-applied asbestos cement also $1\frac{1}{2}$ inch thick. This contractor's method of application has been found satisfactory and involves the use of $\frac{7}{8}$ by $1\frac{3}{4}$ -inch wooden lathing, or furring strips. Such strips were nailed to the inner surfaces of the insulation near and parallel to edges, being placed 2-in. from the edge for top and bottom sheets and flush with edges for side sheets. The ducts thus insulated in this instance were round and of varying sizes.

At points where distances from main to elbow were under 8 foot no special branch support was

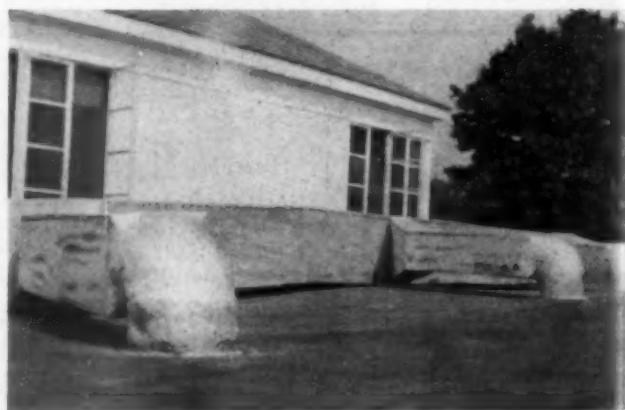
employed. But when distances were over 8 feet ducts were supported 10 feet apart by 3 by 3-inch angle iron laid crosswise and screwed to roof boards. This automatically raised such ducts 3-inch above the roof surface. In some cases the normal duct line increased this space and here $\frac{3}{8}$ by 1-inch bandiron braces were attached to duct undersides and, again, to roof boards by metal and wood screws.

Air Space Under Ducts Stops Rot

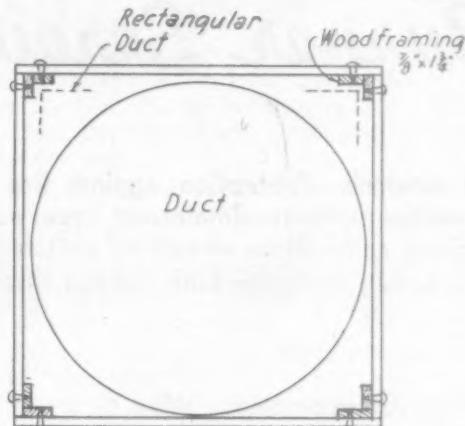
In the experience of Mr. Demuth roof ducts should not lie directly on roofing because this presents moisture and soot pockets, allows sound transmission through roofing and prevents the insulation of duct undersides.

The drawings show that in applying board or slab-types of insulation of the variety discussed slabs are first cut to proper size, allowing 1 inch of free area between the duct and the insulation when applied except on the top. The top sheet usually rests directly on the duct metal for round ducts, but is raised 1 inch for rectangular ducts.

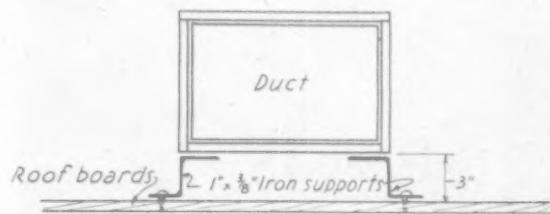
The mechanic then nails the wood lath strips



Slab insulation is used only on panels. Elbows, curves, etc., have asbestos cement applied by hand. Finish coat is aluminum paint.

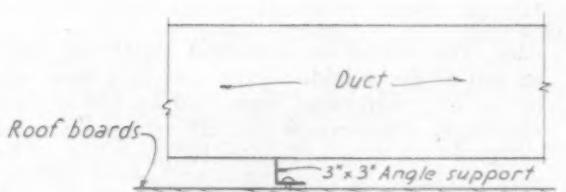


SECTION



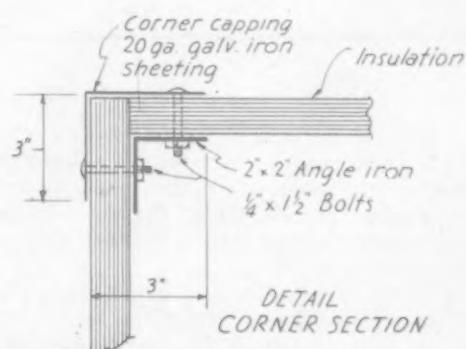
When ducts are over 3" above roof
and over 8'-0" long

ELEVATION - SECTION



When ducts are over 8'-0" long and 3"
or less from roof

SIDE ELEVATION



DETAIL
CORNER SECTION

parallel to insulation edges 2 inch in for top and bottom sheets and flush for sides, as already described. The bottom insulation slab is first applied, then the top and, last, the sides, nailing through slabbing into lathing. This makes a sort of box that subsequently is made tight by filling cracks both lengthwise and crosswise with asphalt asbestos roofing compound, usually called asphalt roofcoating.

The final step in the installation here pictured is giving the entire work two coats of aluminum paint. Readings taken last summer indicated temperature rise within ducts from conditioner to rooms of less than 10 deg. increase. Under average conditions air temperature change was negligible. Cooling results were satisfactory and no leaks developed in the covering.

Angle Iron Frame Construction

In recent years a slightly different insulation method was practiced by the same contractor wherein 2 by 2 inch angleiron was substituted for wooden lathing and full galvanized sheet steel corner capping used as extra protection. This method also proved satisfactory and was equally easy to erect.

This plan, shown in sketch, involves corner assembly with the steel sheeting overlap at corners. The metal capping, insulation slab and angle iron were drilled with matching holes before assembly.

In assembling $\frac{1}{4}$ by $1\frac{1}{2}$ inch bolts were passed through the three layers. That is, steel sheeting, insulation and angle iron. Before application of the steel sheeting the slabbing joints were filled with asphalt compound or other suitable plastic. When slightly set, the steel capping was bolted on.

Asphaltic Weather Coating

The manufacturer recommends the further protection under such conditions of fully coating the entire insulation material as soon as laid with an asphalt-base compound similar to ordinary roofing compound. This keeps out weather and increases the insulation effect of the completed work. This manufacturer also has available a slab material composed of fibrous material that has a $3/16$ -inch covering of Portland cement. This resembles familiar roofing shingles.

The Demuth Sheet Metal Works have provided duct covering similar to the two methods already described, plus the use of loose cement, applied much like boiler covering, in cases wherein ducts have to be run in trenches beneath unexcavated structures. Insulation results proved equally as satisfactory. Dampness and cold, however, are vital factors for consideration here rather than summer heat as is typical on roofs. Trench ducts, further, have to resist continuous deterioration instead of the intermittent evil forces that attack roof ducts.

Essentials of Oil Burner Service

Part IV

Limit controls—Protection against fire hazard
Differential settings—Immersion type aquastats
Checking calibrations—Mercury switch controls
Direct action controls—Line voltage thermostats

By E. F. Fuller, E. F. Fuller Engineering Co., Oconomowoc, Wisc.

Limit controls consist of a variety of automatic switch fabrications, designed to cut out the main burner circuit when the predetermined high limit temperature or pressure has been reached in the heater.

All warm air, hot water, vapor vacuum, or steam heating systems should be provided with automatic limit controls to insure efficient operation and safeguard against excessive temperatures and pressures.

If a safety limit control is omitted, an abnormal condition may be caused by a door or window being left open by accident, near the room thermostat; this may cause the burner to continue to deliver heat until the thermostat is satisfied, which may result in dangerous temperatures or pressures being built up, causing fire, boiler explosions, or other serious damage to the heating plant and building.

Limit switches may be of the mercury switch type, single or double contact switch, or bellows type.

Diagram 11, illustrates the "Airstat" which is a limit control for a warm air furnace. It is mounted with its thermal helical element exposed to the heated air passing through the bonnet or plenum of the fur-

nace. The airstat consists of a metal case and cover; on top of the outside of the case is a lever operating on an arc, calibrated from 100 to 500 degrees. The maximum temperature cut off settings are made by shifting this lever to the desired limit cut off temperature indicated on the calibrated arc.

For straight protection against fire hazard only, the average setting is usually from 225 to 275 and seldom over 350 degrees, depending upon the nature of the heating system. The maximum setting of this control will open the line voltage circuit to burner when plenum temperature reaches the airstat maximum setting, which is contemplated to prevent over heating and damage to the warm air furnace.

These models incorporate an adjustable on and off differential mechanism which permits the installer to set the device to exactly meet the operating requirements of each installation. A minimum of 25 and a maximum of 100 degrees differential adjustment is provided, dependent upon the temperature rise per minute in the plenum. The differential setting is located inside the case to eliminate tampering and the adjustment is accomplished by moving the differential adjustment plates to the desired temperature differential.

In case the differential setting is 50 and the limit cut off is 250, when the plenum temperature reaches 250 degrees, the burner will cut out and the furnace



Diagram 11—The "Airstat" limit control for a warm air furnace. It is mounted with its thermal helical element exposed to the heated air passing through bonnet or plenum of furnace.

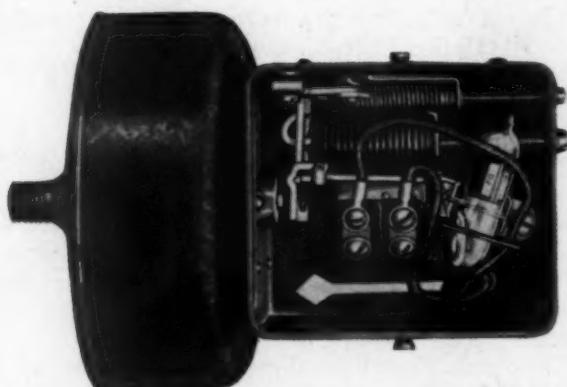


Diagram 13—A type of "Vaporstat" which is widely used on vapor heating and steam systems operated on the principle of tilting a mercury switch by a linkage mechanism.

will start to cool off. When the plenum reaches 200 degrees, the burner will recycle.

When used without a room thermostat, the temperature at which the burner will start and stop is regulated by the temperature indicator and the differential setting, and the burner will go on and off on plenum temperature only.

When used with a room thermostat, both astat and thermostat must call for heat before the burner will start. The burner will stop, however, when the bonnet temperature reaches the limit temperature indicated by the setting of the adjustment lever, regardless of the room temperature.

The limit control on a hot water heating system is called an "Aquastat," which may be of the immersion or surface strap on type. Diagram 12, shows one type of a "strap on" aquastat control, which is strapped to the hot water riser directly above the boiler, bringing a special cast alloy base, which does the expanding and contracting into direct contact with the riser temperature change. This opens the burner circuit on high and closes on low temperature settings. Fast response to temperature changes is assured by virtue of the entire length of the base being in contact with the hot water riser.

This aquastat has a single pole switching action with a fixed differential factory setting of about 15 degrees. Current models have a water temperature adjustment from about 100 to 220 degrees, but do not have a temperature differential adjustment. Hot water controls are accurately calibrated at the factory and seldom lose their calibration, unless they are accidentally damaged or tampered with. If a control is damaged, it is best to return it to the factory for repair or recalibration.

Immersion Type Aquastat

The functions of the immersion type aquastat are similar to the strap on type with the exception that it is made for direct mounting by inserting the thermal element into the boiler water and screwing the aquastat into a threaded hole in the boiler shell. The aquastat must be placed where the boiler water has good circulation. If the thermal element is improperly located in a pocket where the water circulation past the element is poor, the control may appear to be out of calibration.

To check calibration, immerse the thermal element in hot water at a given temperature. After about 5 minutes, move the temperature dial or indicator to the high end of the scale and then slowly move the dial or indicator in the reverse direction, noting the point at which the contact closes. If the calibration is correct, the contacts will close when indicator setting coincides with boiler water temperature.

Direct action aquastats cut out when the scale pointer is opposite the temperature marking which corresponds to the thermometer reading. When a circulating pump is used, on a hot water system, a reverse acting aquastat is customarily used, which starts the burner on the low setting and cuts it out on the high setting for boiler water temperature. Thus when a direct action aquastat is set for 180 degrees the burner will cut out when the boiler water reaches 180 degrees, and a reverse action set for 150 degrees will start the burner when water temperature drops to 150 degrees.

Diagram 12 shows a "Pressure control" which is

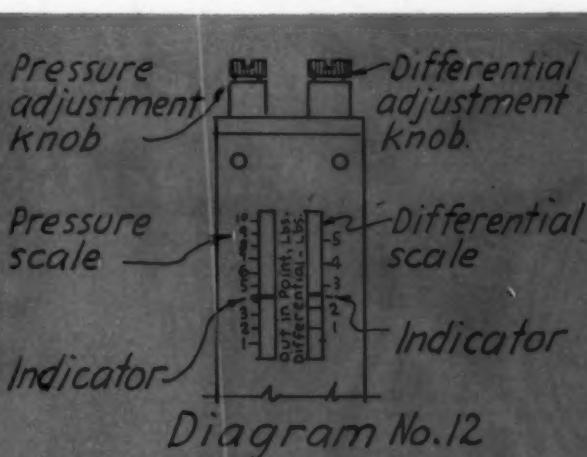
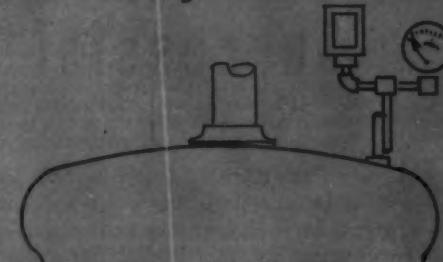


Diagram No. 12



Vaporstat pressure controls should be mounted on a syphon. The coil of the syphon be placed at right angles to the cross bar, or tubing to which the vaporstat is connected.

Diagram No. 14

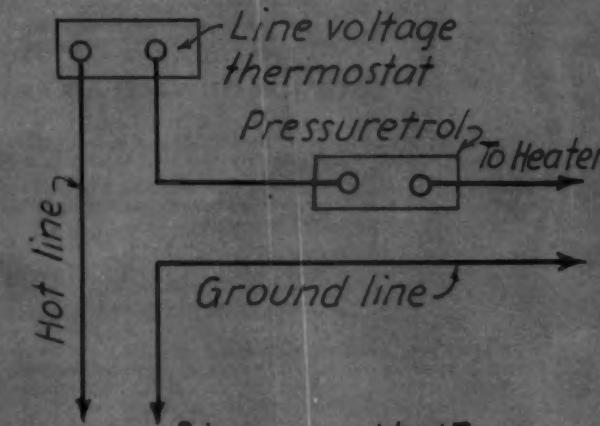


Diagram No. 15

Diagram 12—A type of "Strap on" aquastat control.
Diagram 14—Control connected to top of boiler by means of syphon.

Diagram 15—Wiring diagram for a "Pressureretrol" with a line voltage thermostat.

operated by two springs with pressure adjustment knobs and twin contact switch mechanism, one controlling the boiler pressure and the other the differential setting. The direct action models are designed to open the circuit when the boiler pressure reaches the pressure setting and the reverse action models close

(Continued on page 132)

Essentials of Oil Burner Service

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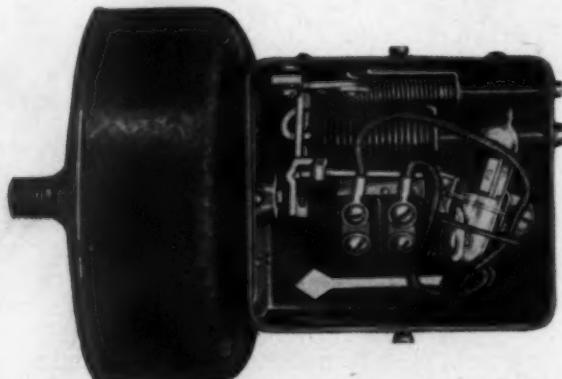


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Diagram 12 shows a "Pressure control" which is

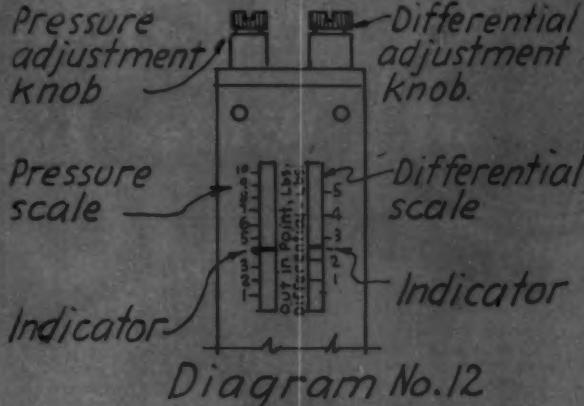
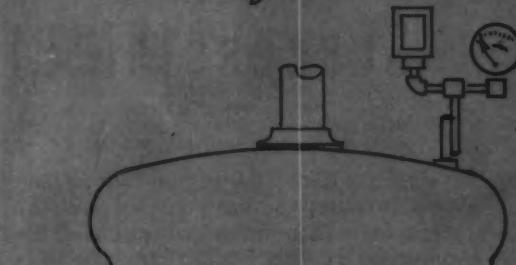


Diagram No. 12



Vaporstat pressure controls should be mounted on a syphon. The coil of the syphon be placed at right angles to the cross bar, or tubing to which the vaporstat is connected.

Diagram No. 14

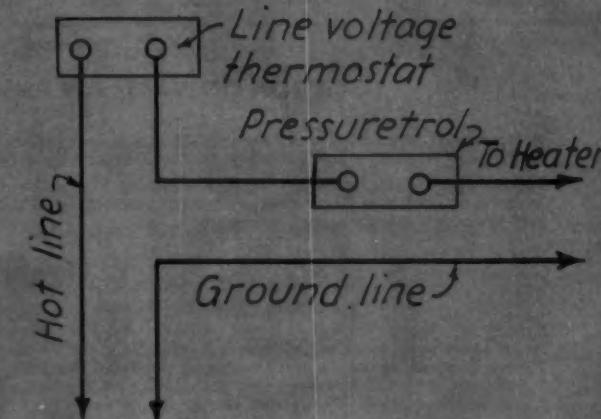


Diagram No. 15

Diagram 12—A type of "Strap on" aquastat control.
Diagram 14—Control connected to top of boiler by means of syphon.

Diagram 15—Wiring diagram for a "Pressuretrol" with a line voltage thermostat.

operated by two springs with pressure adjustment knobs and twin contact switch mechanism, one controlling the boiler pressure and the other the differential setting. The direct action models are designed to open the circuit when the boiler pressure reaches the pressure setting and the reverse action models close

(Continued on page 132)



The "How, What and Why" of the New Winter Air Conditioning Manual

BY
S. KONZO*

HOW TO USE IT
WHAT RESEARCH BACKS IT UP
WHY EVERYBODY SHOULD ADOPT IT

Successful Blower Operation

The consumer has the simple notion that as long as he buys the best furnace, the best burner, and the best control system, he will automatically obtain the best comfort-producing heating plant. Let's get this matter straightened out before we go too far into the matter of design of plant and selection of equipment.

The mechanical parts of any central heating system, regardless of whether it be steam, hot water, or warm air, are just so many pieces of "apparatus" until they are properly installed and properly correlated into a *harmonious* combination. No amount of advertising, selling, product engineering, or plant

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design on the part of the manufacturer will overcome the handicaps of an improperly correlated assembly of all the parts in the field. Our answer to the homeowner who asks "What furnace or what burner shall I buy?" is: "It isn't a question of whether Model A is better than Model B. The real question to be decided by the homeowner is whether Installer A is more competent and reliable than Installer B."

I would like to see emblazoned in every manufacturer's office, in every heating contractor's storefront, and in every salesman's notebook these words:

"A warm-air, winter air conditioning system is more than registers alone, or a blower, or a furnace, or a set of controls. A properly installed and

Section C LOCATION OF WARM AIR REGISTERS AND RETURN AIR INTAKES

A warm air, winter air conditioning system is more than registers alone, or a blower, or a furnace, or a set of controls. A properly installed and properly operated system is a closely knit working combination of all component parts.

Hence, any consideration of register locations cannot be divorced from equal attention to the method of blower operation to be used, which in turn involves the proper setting of automatic controls. The simple basic rules for proper installation and operation are presented below.

1. Blower Operation

BASIC RULES

- A building is most satisfactorily heated by a winter air conditioning system when the blower operates for long periods in mild weather, and practically continuously in weather colder than about 40 deg. F.
- The heat input should be so controlled that in mild weather the burner, or draft damper, operates frequently, but only for short periods.
- The blower should operate until the furnace is cooled, otherwise heated air will circulate by gravity through the nearest registers, or those highest above the furnace.
- The ideal method of operation, therefore, is that in which the blower operates for prolonged periods and stops only when the temperature of the circulating air is so low that gravity circulation becomes negligible. In Section H are given simple rules on proper control settings that will provide this ideal method of operation.

EXPLANATION

More uniform heating will be obtained by circulating a reasonable volume of air continuously than an excessive volume of air intermittently.

By doing so, the temperature of the air that is delivered to the rooms is modulated to the actual heating requirements of the building for all ranges of weather.

Little gravity circulation will be obtained from distant registers, or from registers in basement rooms, and such rooms will tend to cool more rapidly than those supplied with gravity circulation.

Frequent cycling of the source of heat, together with prolonged blower operation insures:

- Controlled temperature distribution in all rooms of the building, whether in the basement, on the first story, or over an unheated garage
- Room temperatures are maintained at nearly constant value near the floor as well as in the living zone.

Fig. A.—The basic rules for successful blower operation are simple.

Section H

BRIEF NOTES ON INSTALLATION AND OPERATION. (SEE SECTION C.)

SUCCESSFUL OPERATION OF THE HEATING SYSTEM REQUIRES CAREFUL ATTENTION TO:

- a. RELATIVELY LOW SPEED OPERATION OF THE BLOWER,
- b. LOW SETTING OF THE CUT-IN TEMPERATURE OF THE BLOWER SWITCH,
- c. ADJUSTMENT OF DEFLECTING VANES IN WARM AIR REGISTERS.

THE BLOWER OPERATION SHOULD BE PRACTICALLY CONTINUOUS IN AVERAGE WINTER WEATHER.

4. Select the most SENSITIVE TYPE OF AUTOMATIC CONTROLS available. Frequent cycling of the heat source is necessary for best control with practically continuous blower operation.

5. SET THE ROOM THERMOSTAT for the minimum practical differential. See instructions of the furnace manufacturer. Let the heat source operate frequently and for short periods. Heat anticipating, or heat accelerating, types of room thermostats assist in producing frequent cycling of the heat source.

6. Locate the FAN SWITCH (or blower control) high in the plenum chamber near the warm air duct that leads to the highest registers on the plant. In some cases, the furnace casing is provided with a specific location for fan switch and limit control, in which case the manufacturer's specified location for controls must be used.

The controls may also be located in the duct leading to the highest registers. Avoid locations near a duct that leads to basement rooms, or to the lowest registers on the plant, because initial gravity circulation may pull heat away from this duct before the blower starts, and the control will not properly operate the blower.

8. After the heating system is installed, the plant may require final balancing and adjusting. WARM AIR WINTER AIR CONDITIONING SYSTEM IS EXTREMELY FLEXIBLE, AND ADJUSTMENTS in air volume and air temperatures can be readily made. The following procedure is recommended:

e. When all the warm air registers are at the high side-wall location, the fan switch should be adjusted to start the fan when the bonnet air temperature has reached about 110 deg. F., and to shut off at about 25 deg. F. lower than the starting temperature.

When any warm air registers are located at the low wall, baseboard, or floor locations, slightly higher air temperatures will usually be required. The fan switch should be adjusted to start the fan when the bonnet air temperature has reached about 130 deg. F., or slightly less, and to shut off at about 25 degrees F. below the starting temperature.

f. IT IS DESIRABLE THAT THE BLOWER BE STARTED WHEN THE BONNET AIR TEMPERATURES ARE LOW. The LIMIT SWITCH should be set, independently of the fan switch, so that the bonnet air temperature cannot exceed about 175 deg. F. Often the limit switch cannot be adjusted independently of the fan switch. In this case, set the fan switch at the lowest bonnet temperature which will heat the house in the most severe weather.

g. All control equipment is not equally sensitive, equally precise in calibration, or equally effective at all locations of the controls. In any case, the principles stated in items (e) and (f), of operating the blower at relatively low bonnet air temperatures should be followed.

h. Set the blower for the LOWEST POSSIBLE SPEED to give the volume of air required to heat the house in the most severe weather.

Fig. B.—Here is industry's answer to "How?"

properly operated system is a closely knit working combination of all component parts."

Few sections of the Manual contain so much "meat" as do Sections C and H, in which the basic rules for blower operation and register location are clearly outlined. The rules are self-explanatory, as shown in Figs. A and B. Back of these rules, however, lies the practical experience of observant engineers and the results of many seasons' tests in the Research Residence.

The following discussion is primarily for those who desire some of the background which led to the formulation of the rules in the Manual.

Air Flow and Temperatures (Gravity)

Every warm-air heating man will have a better appreciation of winter air conditioning if he has a clear understanding of what takes place in a gravity system. When a small fire is generated in a gravity furnace, the following events occur:

- a) The air becomes heated a few degrees by the heating surface of the furnace; that is, a small temperature rise occurs.
- b) This small temperature rise of air creates a small air circulation.
- c) If the fire is increased, a larger temperature rise occurs, and a larger air circulation is ob-

tained. This can be shown in graphical form as shown in Fig. C. (Page 78)

- d) The amount of air being circulated is, therefore, not a fixed quantity. The hotter the fire, the greater is the air flow.
- e) The air flow is *continuous*. There are no off-periods in air circulation, except when the fire has been off for a long enough time to cool the furnace down to room temperature.
- f) The temperature rise of the circulating air is also constantly changing with the intensity of the fire.

In other words, in a gravity warm-air heating plant the air quantity and the air temperature are both automatically modulated to vary with the intensity of the fire and the heating demands.

Every heating engineer appreciates the fact that in a gravity plant, a warm-air riser that is sluggish in operation can often be made to function better when a higher bonnet air temperature is maintained. Unfortunately, many heating men carry over this same idea to forced-air practice. If they run into a trouble job where a given room does not heat properly, their first impulse is to raise the temperature setting of the fan switch and to increase the speed of the blower. This impulse should be restrained; it leads to jerky, on-and-off, now-we-have-it and now-we-don't operation. A large proportion of apparently mediocre, forced-air jobs can be vastly improved in operation by a few simple adjustments of the fan switch set-

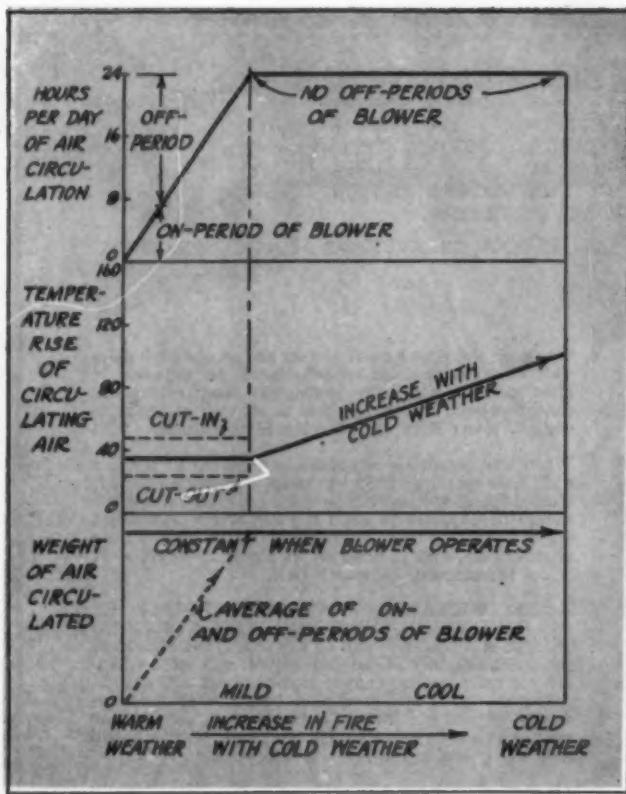


Fig. C.—Air temperatures and air circulation with a gravity warm-air plant.

ting, the differential setting of the room thermostat, and possibly of the blower speed.

Air Flow and Temperatures (Forced-Air) (Intermittent Blower Operation)

Now let us see what happens in a forced-air plant, when it is operated to give continuous blower circulation *only* in extremely severe weather, and intermittent blower operation for over 95 per cent of the season. See the graphs in Fig. D, and compare them with Fig. C. This method of operation is still in very common use, and is an inheritance from the early days of forced-air heating practice when a fan was considered merely as a "booster" to give the gravity plant a little "shot in the arm." Experience has indicated that this method of operation is not completely satisfactory, even though the design of the duct system and the selection of equipment might be made in accordance with the best design practice. These booster-gravity plants are neither a true gravity plant nor a true forced-air installation. The main objections to this method of operation, in which relatively high settings of the fan switch are maintained, may be enumerated as follows:

- The balancing of the duct system is difficult, if not practically impossible. If the air distribution is balanced to heat the various rooms in a house in very cold weather, the system tends to become unbalanced in milder weather.
- When the blower is off and some heat remains in the furnace, most of the heated air will circulate by gravity action to the nearby second-story rooms. These rooms will cool slowly during the off-period of the blower, whereas such rooms as first-story rooms, distant rooms over a garage, basement living rooms, and sunrooms will cool at a faster rate. Complaints of the so-called

"cold-70" condition are primarily due to the cooling that takes place in the room during the off-periods of the blower.

- Maintaining high bonnet temperatures over the entire heating season results in large off-period losses up the chimney and larger casing losses to the basement, with the result that the efficiency of fuel utilization is reduced.
- Higher temperatures at the warm-air register result in hotter ceilings, particularly in the case of registers at the high sidewall locations.
- During the off-periods of the blower, the warm-air ducts to first-story rooms cool off, so that when the blower starts to operate, a "slug" of cool air is discharged into the room. This is particularly noticeable in the case of baseboard register installations.
- In the case of intermittently-fired units, such as oil furnaces and gas furnaces, the cold furnace must be raised in temperature to a relatively high point. This requires an appreciable time interval, during which the rooms are cooling off *below normal*, and also requires long-periods of burning which results in some overruns in room temperature.
- Unless blower operation is maintained, the control of air circulation in the rooms cannot be maintained.

Air Flow and Temperatures (Forced Air) (Operated According to Manual Plan)

The fact that a design temperature of 165 deg. is used does not imply that the cut-in temperature of the blower should be set at 165 deg. or higher. If the system is operated according to Sections C and H in the Manual, the operating characteristics, as shown

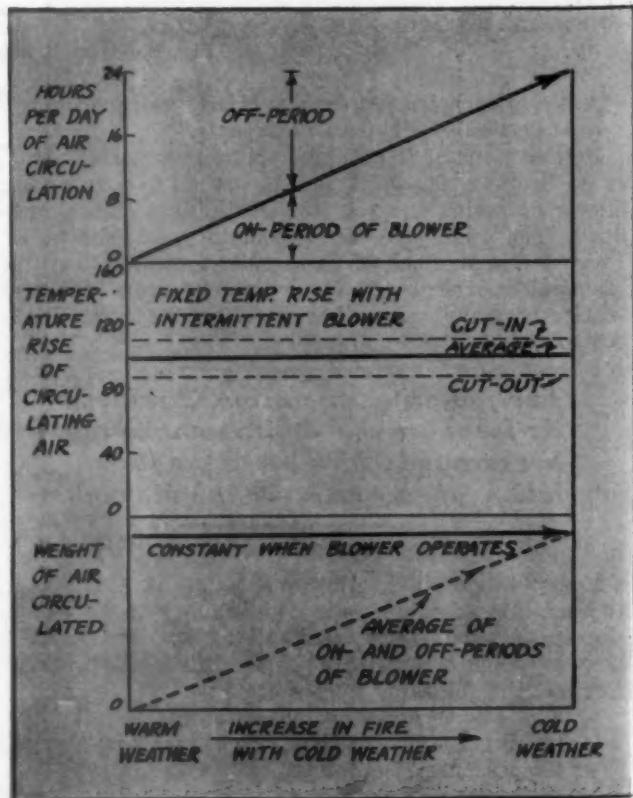


Fig. D.—Air temperatures and air circulation with a forced-air plant operated with high bonnet temperatures.

in Fig. E, begin to resemble that for gravity operation (Fig. C). In weather warmer than about 40 deg. F. the blower operates intermittently, but for weather colder than about 40 deg. the blower runs practically continuously. The outdoor temperature at which the blower operation changes from intermittent to continuous running depends upon the cut-in setting of the fan switch. In the case of high sidewall registers, this setting can be lower (about 110 deg.) than in the case where baseboard registers are used (about 130 deg.), so that a larger part of the heating season can be covered with practically continuous blower operation.

It should be noted from the middle curve in Fig. E that the average temperature of the circulating air is constant only in mild weather. As the weather gets colder, and the blower operates continuously, the air temperature gradually rises. Finally, when extremely cold weather is encountered, the air temperatures in the furnace bonnet approach the design value.

Design and Actual Bonnet Air Temperatures

Some engineers have questioned the use of 165 deg. F. as a design value for the bonnet temperature, and have suggested that a value of say 150 deg. might be more desirable. Actually, the value of 165 deg. should be regarded merely as a basis for starting the design of the duct system. In practice, as shown in the middle curve of Fig. E, the system will operate over 95 per cent of the heating season at temperatures ranging much below 165 deg. F.

Theoretically, during the few days of the heating season when the outdoor temperatures are near design conditions, the bonnet temperatures should be 165 deg. However the experience in the Research Residence shows that under actual conditions, the bonnet temperature will be less than 165 deg. provided that the air circulation is as large as the calculations required. In the design of a forced-air system, it is assumed that only about 50 to 68 per cent (depending upon the type of burner) of the heat generated in a furnace actually appears at the registers to offset the heat loss from the rooms, and that the remaining 50 to 32 per cent is not available. In the calculations we ignore the possible heat regains into the house from such sources as warm-air risers, basement ducts furnace casings, smokepipe and chimney.

Actually, any central heating plant in a home will function to a marked extent as a *panel heated system*, and we do not need to deliver all the heat at the registers which we figure that we will need. Obviously, those rooms having extensive panel-heated surfaces, such as a warm floor over the furnace room, will require only a part of the heat losses to be made up by the heated air from the registers. In other words, the overall utilization of heat is much greater than the 50 to 68 per cent assumed in the calculations. Under design weather conditions, therefore, we can expect and we actually do get average bonnet temperatures much less than 165 deg. F. Hence, although a bonnet temperature of 165 deg. is assumed in design, it should be considered merely as a tool for the design of the duct system. We can expect the hidden factors of safety as represented by any heat regains to assist in actually maintaining lower bonnet temperatures.

Importance of Good Duct Design

Since the blower is operated for comparatively long periods of time, the matter of good duct design and low resistance of the duct system becomes of prime

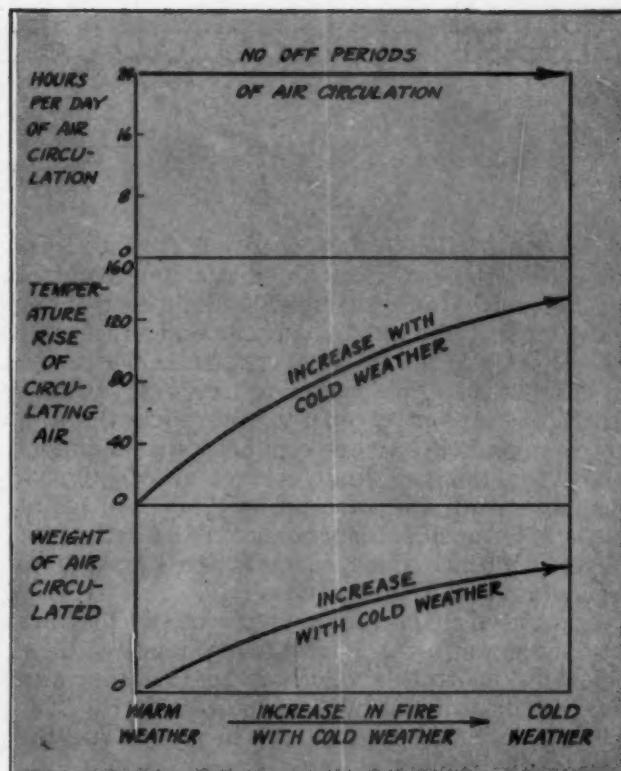


Fig. E.—Air temperatures and air circulation in a winter air conditioning system operated according to manual directions.

importance. As explained in the May issue, the most desirable results will be obtained when a large blower can be operated at low speeds. This will be possible if the duct design takes into consideration such items as temperature drops in ducts and the pressure losses in the fittings. Both of these items have been incorporated in the simplified selection tables in the Manual, and there should be little excuse for the fussing and fretting that sometimes accompanies those jobs which are designed according to the guess-and-prayer method.

Importance of Frequent Burner Cycling

In the type of control system which is in most common use, the room thermostat controls the operation of the burner, and the fan switch controls the operation of the blower. In other words, the blower operation and the burner operation are only indirectly related.

When the room thermostat calls for heat the burner begins to operate and the temperature of the circulating air begins to rise. Since the blower is operating almost continuously in ordinary weather, the room temperatures begin to rise almost at once. When the room thermostat is satisfied, the burner stops operating, but as long as there is some residual heat in the furnace the blower continues to operate. If the room thermostat is sensitive to room temperature changes, the amount of temperature overrun will be small and the burner will be required to cycle frequently.

In general, the differential settings of room thermostats provided by the control manufacturer are too large for warm-air practice. In the case of gas-fired equipment in the Research Residence, for instance, it was found that the $1\frac{1}{2}$ degree differential provided in the room thermostat gave infrequent but long

(Continued on page 128)

Effect of Radiant Heat on Fan Controls

By Willis W. Howe
Sausalito, Calif.

GAS-FIRED, fan operated furnace systems are provided with automatic limit control and automatic fan control. The limit control operates to shut down the gas if the temperature of the bonnet reaches the temperature at which the control is set—this temperature is frequently 215°F. The control operates to turn the fan motor on and off. In one common type of control where the fan and limit control are combined, the fan control will turn on at 175°—and off at either 155° or 135° depending on the setting of the differential. Such controls are supposed to operate on *Air Temperatures*.

It has been found that very frequently they are actually operating on *Radiant Heat* temperatures. When the controls are located so that they can "see" the heating element, radiant heat from this element traveling in straight lines will hit the helix of the control.

Investigating one insufficient heat complaint showed that the controls were working as follows:

	Setting	Cutting Off	Cutting In
	at	at	at
Limit Control....	215°	210°	200°
Actual air temperature in bonnet.....			130°
Fan Control	175°	135°	175°
Actual air temperature in bonnet.....			130°

The difference between the control settings and the actual air temperatures was due to the radiant heat given off by the heating element. Results of this radiant heat action on controls:

1st. Reduction in furnace capacity of about 25 per cent.

2nd. If fan continues operating 40° under its setting, $175^{\circ} - 40^{\circ} = 135^{\circ}$. If this were air temperature, it would be OK. However, actual air temperature is 130° . $130^{\circ} - 40^{\circ} = 90^{\circ}$. With a further drop in temperature, due to duct loss, we could anticipate a "register blowing cold air" complaint.

Remedy: Insert metal baffle plate under helix of control. Allow about $\frac{3}{4}$ inch between baffle and helix. This will be satisfactory if helix of control is 6 inches or more above heating element. If helix is very close to element, move the control and then use baffle.

Transmission: If the furnace output is A, B.t.u. per hr. and the furnace element has B sq. ft. of heating surface, the rate of transmission

$\frac{A}{B}$ will be — B.t.u. per sq. ft. per hour.

B

A

If the rate $\frac{A}{B}$ B.t.u. is high, the radiant heat effects will be strong and the controls will be operated by *radiant heat* and not *air temperatures*.

A

If the rate $\frac{A}{B}$ B.t.u. is low, the radiant heat effects will be weak and the controls will be operated by *air temperatures* for which they are designed.

U. of I. Low Cost House Research

THE University of Illinois announces plans for the nation's most comprehensive research, experiment, and demonstration center for attacking problems of good low-cost housing.

The new project at the university contemplates a four-block area containing a \$400,000 "Demonstration Center" and "Production Yard" with three blocks of test houses surrounding it.

The new project is planned by the Small Homes Council of the university, headed by William H. Scheick. The work will utilize the university's faculty of experts in many fields.

The Demonstration Center and Production Yard will provide unlimited possibilities for applied experiments which cannot be done in the fixed surroundings of individual research homes. It will permit experiments with complete "model homes" without the expensive restrictions involved on an exterior site. A home may

be built with cutaway sections or without a roof for demonstration or photography. Full size structural elements may be built and tested here. Actual rooms may be built and used for experiment and display. The Center will provide for showing findings directly to the public and to university students.

It will have facilities for short courses and many other activities for builders, contractors, dealers, workers and the public. It will provide an opportunity for acquainting workers with new developments, materials and methods.

Some houses will be for technical research and others will be actually occupied by families for studies involving typical use. This offers conditions likely for low cost homes in many communities and opportunity for research to improve living in industrial surroundings.

AMERICAN ARTISAN

SHEET METAL

SECTION



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AMERICAN ARTISAN, July, 1945

Short Courses in Contract Termination

By Roger B. Putnam

Deputy Director, Office of Contract Termination

SETTLEMENT of terminated war contracts often presents a difficult problem for the smaller contractor. Although experience has shown that larger claims take longer to settle than the smaller ones, many small contractors do not have the facilities or manpower available to file their claims and assure themselves of getting prompt payment.

The contracting agencies and the Office of Contract Settlement realize that the objectives of fast, fair, and final settlement of terminated war contracts cannot be met until each contractor knows how to file his claim. Just as contracts were let through the so-called vertical system whereby the contracting agency contracts with the prime contractor who in turn contracts with subcontractors for components, parts, and materials, so in settlement the claims must go up and payments come down the vertical chain. While in special cases other methods may be applied, the great majority of contracts must be settled in this way.

This vertical system places a special premium on the subcontractor knowing how to file his claim promptly, for the delay in handling his claim may in turn delay the claims of the contractors in the tiers above him and thus defeat the objectives of fast settlement.

A successful program for helping the smaller subcontractors and smaller prime contractors could not be developed until there was greater uniformity as to policies and procedures among the contracting agencies. Now that this unity has been established through the publication of the Joint Army-Navy Termination Regulation, and the termination regulations of other contracting agencies follow the same general pattern, a program of contractor-training has been initiated and is being successfully carried out throughout the country.

The basis for this program is a practical four-hour work session whereby each contractor is given the minimum instruction concerning filing a claim. Attendance at these sessions is limited to approximately 50.

The course is presented by means of the Standard Termination Inventory Schedule and Settlement Proposal forms issued by the Office of Contract Settlement and used by all the technical services and bureaus of the Navy. These forms are blown up so that every detail is clear to the contractor in the class room. The course is given by local teams of three officers—a property disposal specialist, an interim financing specialist, and a negotiator, chosen from the Army and Navy personnel and specially trained to undertake this job of training the war contractor.

A specimen case where settlement was actually accomplished is reviewed. The instructor fills out the

blown-up forms, the contractor following this procedure on his own form. In other words, he "learns by doing." At the conclusion of this presentation a question period is held and individual problems are dealt with at length by the instructors. The contractor is then given a short problem to work out.

The detail of correctly filling out the contractor's claim is of the utmost importance because, until he has submitted a properly prepared inventory, plant clearance cannot start. His settlement proposal form and request for interim financing, if required, must be correct. These forms are prime requisites to any negotiation leading toward settlement.

While in the short four-hour session it is not possible to go into all the ramifications and complexities of contract settlement, the course has met with the enthusiastic approval of those who have taken it, and has been a great help to speeding the handling of claims.

The courses are sponsored by the Subcommittees on Training and Information of the Termination Coordination Committees in 21 key industrial areas. In a number of these areas requests for the course have been so heavy that second and third teams have been added to the original single three-man team.

The personnel of all contracting agencies as represented on the Termination Coordination Committees have been cooperating in bringing the training opportunities offered by these courses to the attention of contractors in their locality. Each training team has a full-time secretary, charged with making the necessary arrangements for holding the sessions and getting attendance. Any contractors desiring to attend or to have their employees attend should contact their contracting officers or representatives of the Smaller War Plants Corporation who will refer them to the Secretary of the Subcommittee on Training and Information of the Termination Coordination Committee in their area.

A new standard accounting session has been prepared and will be started in several Termination Coordination Committee areas shortly. Throughout this half-day meeting, war contractors and government representatives will participate in an organized discussion of accounting problems which, for lack of time, cannot be covered in the basic work session.

After pre-testing in the field the contractor-training program was put on a national basis and thus the contractor in New England receives the same basic training as does the firm on the West Coast. From the beginning of March, when the first course was given, until May 19 over 1,000 contractors and their employees, representing more than 10,000 firms, have attended some 500 sessions in 100-odd cities throughout the country.

Fabrication of Main Engine Exhausts



Completed engine exhausts showing elbows, straight sections and necks. The text explains the ingenious factory procedures which reduced cost and shortened production time.

PRE-WAR, Weber Showcase and Fixture Co., Inc., Los Angeles, manufactured for national distribution bank, store and office fixtures, cases and equipment. During the war, Weber has been producing numerous items for the armed forces and prime contractors — airplane leading edge wing assemblies, metal life rafts, engine parts, refrigerators, and a long list of other small and large items.

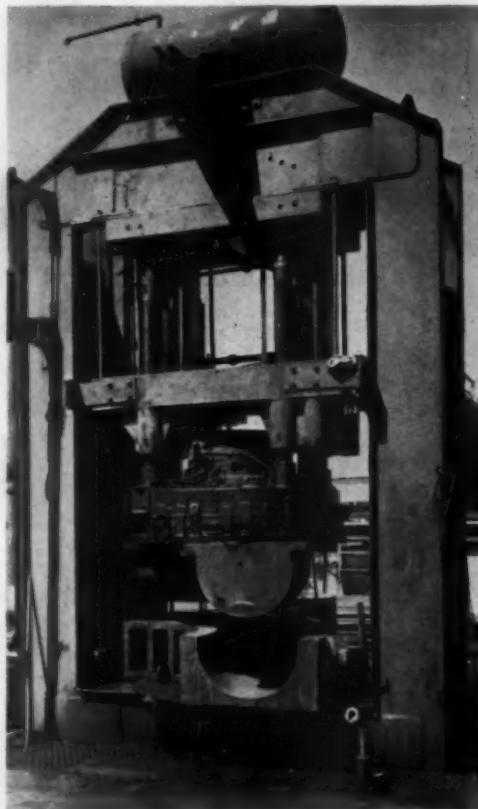
Many of these items are large in size, built of heavy gauge and plate and require ingenious methods of fabrication. An example is the ship engine manifolds shown in the photographs. To produce these large manifolds to the close tolerances specified and at reasonable cost, the company developed the methods and tools explained in the following description:

Fabricating Procedure

First, a sheet of 5/16-inch steel plate, nine by six in size, is cut to a pattern which will make the shape of the elbow to be formed. The sheet, after being torch cut, weighs approximately 300 pounds.

One at a time, these pieces are placed on a pivot type carrying device and swung into a blast furnace which has been previously heated by means of fuel oil to a temperature of 1400 degrees. The steel plate remains in the furnace until the metal is orange red and assumes a temperature the same as the furnace, or approximately 15 minutes.

When the plate is properly heated the sheet is pulled out of the furnace and placed on the face of a female die which has been set in position in a hydraulic press which stands alongside the furnace. One photograph



Hydraulic press (400 tons capacity) with huge dies for one half an elbow. Plates were formed at 1400 degrees.

shows this combination and the method used to handle the plates.

The male die is fastened to the platen of the press. The die descends swiftly under 400 tons pressure. The actual forming requires about 15 seconds. The dies used are either cast iron or Rionite.

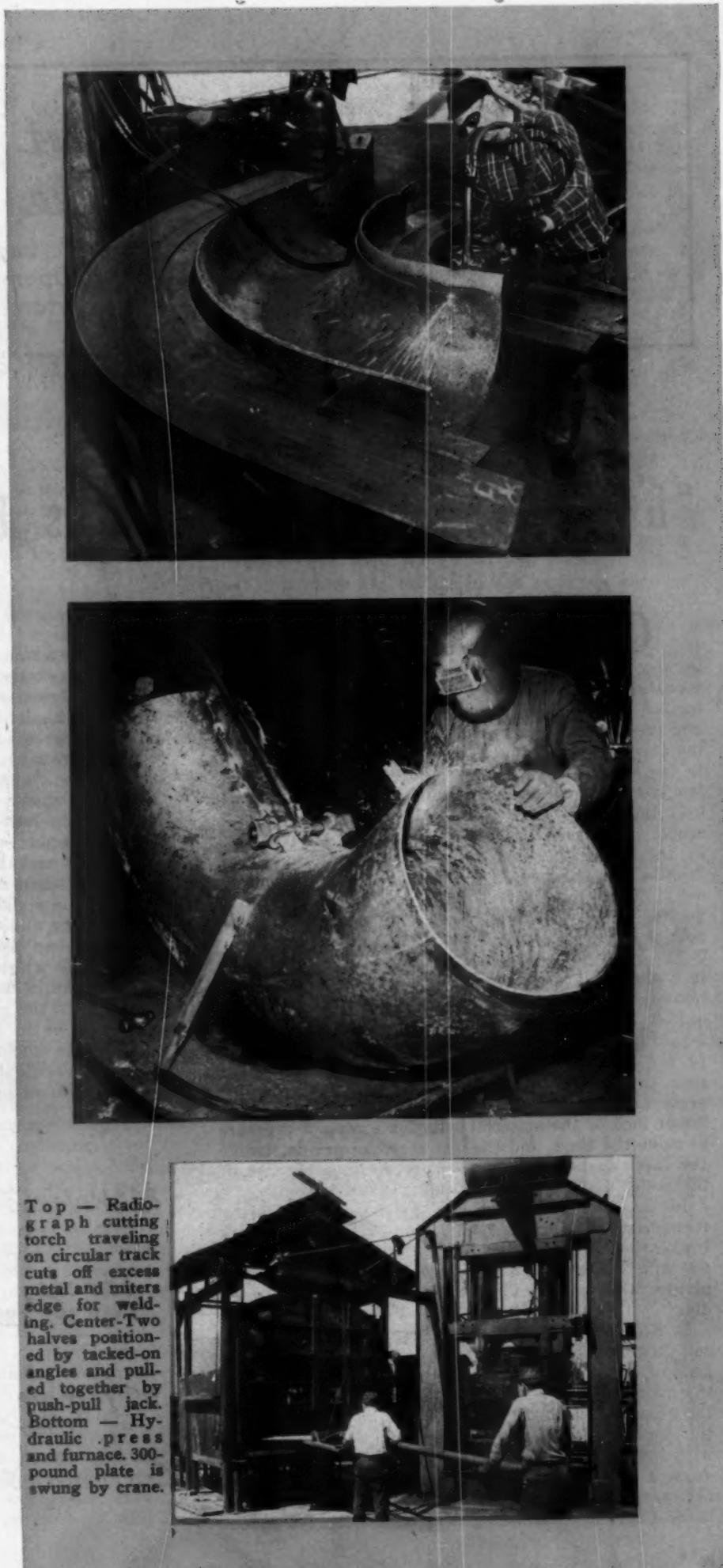
The procedure of stamping the metal while hot represents a saving of more than one half in the cost of the dies. The photographs show that no "drawing ring" is required on these dies as would be the case if the forming was made in cold plate.

After the rough pressing has been completed the resulting shell represents one half of the elbow. This half is taken to a cutting table (see photo) where a portable radiograph cutting torch travels in a circular track around the curved edge of both sides of the elbow half and trims the piece down to correct dimensions. After the actual trimming has been completed, the torch makes another complete trip and miters the edges so that the welding of the two halves together is simplified.

Jack Holds Seam Firm

Welding the two halves together is done with the conventional torch, but the method used to draw and clamp the two edges to be welded into position is somewhat unusual. The two halves are placed in approximate position for welding and held in position by angles tacked to each half as shown. After preliminary tack welding of the two halves together, two small brackets are welded on either side of the seam and a push-pull, screw type jack is fastened on these brackets and the seam is drawn into snug position. The jack holds the seam firmly and correctly while final, continuous welding is done. The completed elbow shown in the welding photo has a diameter of 25 inches.

When the welding of the elbow has been finished, two straight, round sections which have been formed by conventional rolling process are fitted into one end of the unit—one in a straight position and the second at an angle. These sections are then welded in place. The installation of two welded necks in specified positions completes the job for shipment. No finishing or painting is done.



Top — Radiograph cutting torch traveling on circular track cuts off excess metal and miters edge for welding. Center — Two halves positioned by tacked-on angles and pulled together by push-pull jack. Bottom — Hydraulic press and furnace. 300-pound plate is swung by crane.

Getting the Most Out of Your Press Brake

1001 Standard and Special Bending
Forming, Flanging, Punching Operations
Your Press Brake Can Perform

By Ernest E. Zideck
Sheet Metal Consulting Engineer

"Grain Movement" in Press Brake Forming

GOOD press brake operation must distinguish between what is called "air-bend" and "bottoming" operations. "Air-bend" operation is accurately described by the word "bending." The dies are chosen and the ram descent is adjusted to bend the metal to the desired degree angle with only slight *compression* in the metal. In other words, the metal is struck *on the point* of the bend by the male die and *flows* freely over the edges of the female die without any considerable pressure being exercised at any point except in the radial portion of the metal (the so-called "radius" of the bend). At this point only does the metal change its *grain structure*. The outside radial portion of the metal *expands* and the inside radial portion *compresses* the "grain."

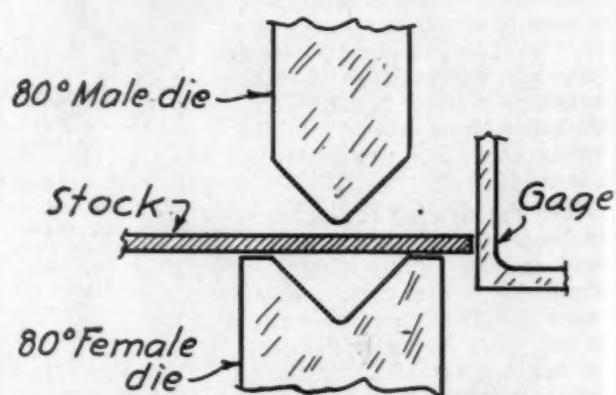
The pressure required to make a 90 degree bend in a piece of 12-gauge mild steel, 10 feet long, seldom exceeds 65 tons. In softer metals the pressure required is less. And if we work 8-foot, 6-foot and 4-foot lengths, the pressure decreases in proportion, so that we can do work which would require 130 tons pressure on 10-foot length with only 65 tons pressure on 5-foot lengths. In other words, each linear inch of the material calls for a certain pressure to make the bend, and the operator can pre-determine the capacity needed for the sum of linear inches of the metal that he processes in a certain brake.

In the accompanying drawings we show different formattures which call for smaller or larger capacity brakes and explain why this is so. In the drawings we will over-emphasize the *behavior* of the metal to picture what happens in braking with wrongly selected die.

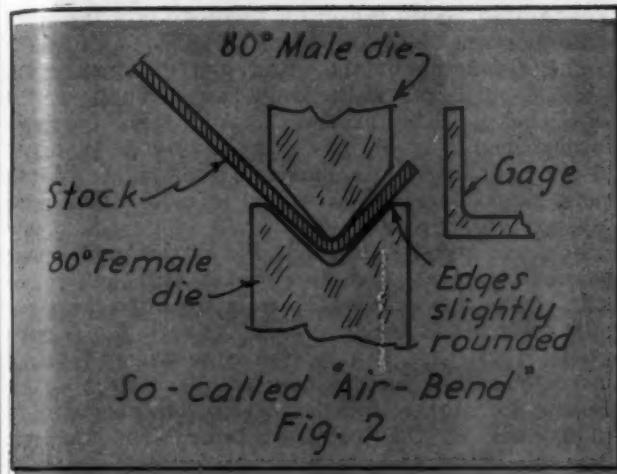
In Fig. 1 we show the selection of dies for what we call "air-bending." This term is used because in this kind of braking only the point of the male die strikes the metal and only the edges of the female die receive the pressure exercised by the die point pressing down the metal. The rest of the metal is never in contact with the dies, but remains "in the air." Here the *ram descent determines the degree of the angle to which the metal is to be formed*. In Fig. 1 the dies are cut to 80 degrees; that will give a bend not over 90 de-

grees. If we want to make bends *over 90 degrees*, we select more pronounced "V" dies for the work.

In Fig. 1 we see a 12-gauge piece of metal inserted over the female die, contacting the adjustable gage, for a 90-degree angle bend. For this class of forming work, the ram can be adjusted to a very short stroke, because the "air-bend" will be easily accomplished. The gage shown in the illustration is intended to indicate the best method of adjusting the gage so that, in rapid succession of operations, the metal cannot slip past it. (See article on gages, May issue.) Now then, when the ram comes down and the point of the male die strikes the metal, *both* the edge contacting the gage and the portion of the sheet held by the operator *jump* upward. If the piece of metal is of considerable width, the operator must guard against the sheet he holds striking him in its upward jump. The *heavier* the gauge of the metal, the more force there will be in its upward movement. When it is necessary to employ green help to assist the operator, this help should be instructed to anticipate the upward movement of the metal and get out of its way.



Common Set-up for "Air-Bend"
Fig. 1



In Fig. 2 we see the ram descended to its adjusted depth, with the metal of Fig. 1 bent to the desired degree angle. The pressure exercised by the brake in doing this bend in 12-gauge mild steel, 10 feet long, is about 65 tons. We see in Fig. 2 that only the point of the male die touches the metal and only the edges of the female dies are in contact with the sheet. These edges of the female die are slightly rounded and usually lubricated on heavy gauge metal work, so that there is no scratching of the metal surface as it slides over the edges into the cavity of the female die. It is seen in Fig. 2 that the *working portions* of the male and the female dies are of identical size—the “why” of this will be explained under Figs. 5 and 6, as we proceed.

In any kind of “air-bend” as shown in Fig. 2, the degree of the bend alone determines the brake pressure required. This is because the displacement of the grain in the metal varies. A 30-degree bend will displace only one-third of the grain displaced by a 90-degree angle formation.

Inspect Formed Pieces

We can visualize this change by looking at the radial portion of the bent metal in Fig. 2. Note the *expansion* in the outside radial portion and the *contraction* of the metal immediately under the nose-point of the male die. Fig. 2 shows clearly why there is more expansion and contraction in the bend which we see (90 degrees), than there would be in only a partial bend (30 or 45 degrees). In harder (or burnt) metals we sometimes will discern indications of “cracks” on the outside radial formation and a kind of “ridge” on the inside of the bend. This occurs when the grain of the metal composition is not “free flowing” to follow the shape of the nose-point of the male die as it descends into the cavity of the lower die. In shop operations the formed pieces should be inspected for such cracks or ridges in the metal before brake operators proceed with quantity braking of the product. Needless to say, the material which will show these cracks or ridges on simple braking should be rejected because such material can cause damage to the brake in a more complicated formation or such as depicted under Figs. 3 and 4.

“Air-bends” will prove satisfactory in parts intended for most of architectural and heating sheet metal products, but whenever sharper and more uniform bends are required, as in cabinets, metal furniture and similar assemblies which require close fit and

pleasing appearance, we use the so-called “bottoming” dies and procedure, shown under Figs. 3 and 4.

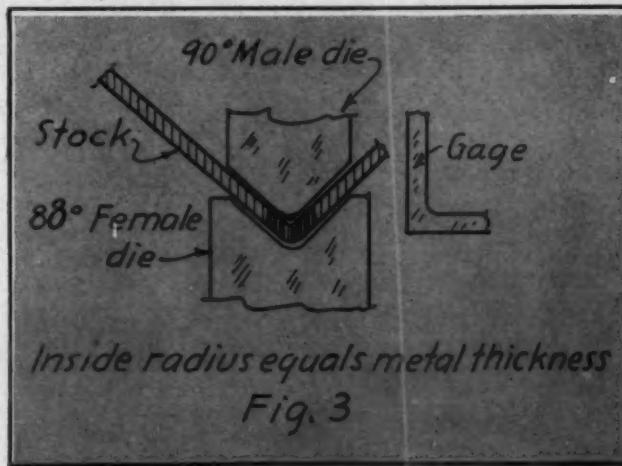
In Fig. 3 is shown a 1-gauge mild steel strip, 10 feet long, braked to that same angle of 90 degrees, as discussed under Figs. 1 and 2. The nose of the working part of the male die is of the same radius as is the striking point of the male die shown in use in “air-bending,” which is a radius corresponding to the thickness of the metal.

The difference between an “air-bend” and the bend illustrated in Fig. 3 is solely in the sharpness and the uniformity of the “outside” radius. In “air-bending,” the radius forms “in the air,” and it is larger and unequal, because the metal will expand more readily if not confined between the walls of the female die. But its expansion will form “bulges” at points in the metal that is not as pliable as some portions of it might be. Sheets of metal are not uniformly hard or compressed. The grain is not uniformly composed the entire length of the strip. Where the grain is more densely congregated, the bending of the metal in these portions will be more difficult, and that is why a larger or *bulging* radius results in these portions, while in the more loosely congregated grain portions of the strip the radius will remain smaller, freely following the radius in the working nose of the male die.

Compression Makes Angles Fit

Now then, in Fig. 3 we see the metal compressed between the working portions of the male and the female dies, the compression resulting in the metal being tightly “wrapped” about the working portions of the male die, with the metal “congested” at the outside radius along the entire length of the strip. Obviously, angles formed in these “compressing” dies will smoothly fit one another and any part of them that happens to be cut into shorter pieces.

But to produce these smooth and uniform angles having the inside radius of the metal thickness, we need *twice* the amount of power, or pressure, that we needed in making the “air-bend.” The brake would have to have a *minimum of 130 tons* capacity to produce this angle in 12-gauge mild steel, 10 feet long. The explanation for this doubling of the pressure is this: While in the “air-bend” there is “free flowing” of the grain to the outside and very little congestion of the grain on the inside radial of the angle, in the “bottoming” operation in Fig. 3, there can be no “bulging out” of the metal, but the metal must be



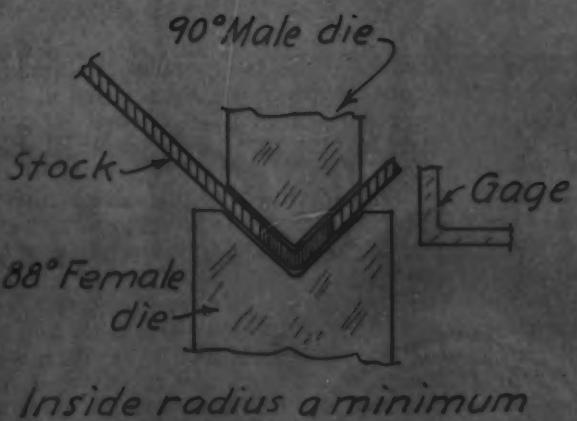


Fig. 4

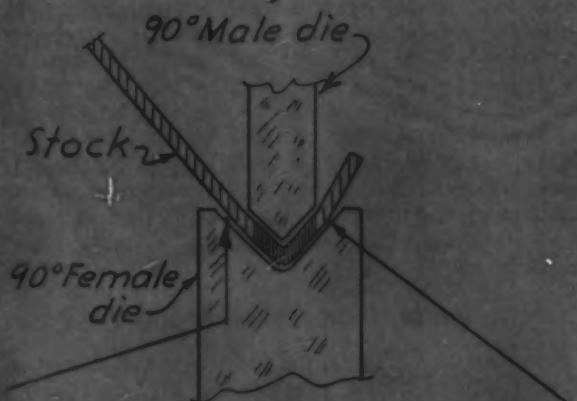


Fig. 5



Fig. 6

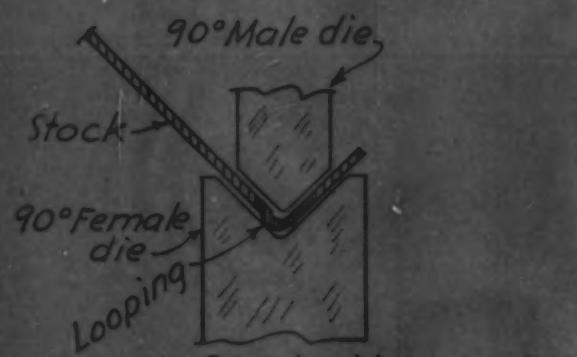


Fig. 7

"compressed," with the grain "forced" into the small radial portion.

The dislodging of the grain and its compression into the small area of the angle-nose accounts for the additional 65 tons pressure. And still the angle formed in dies under Fig. 3 has a full or "natural" inside radius, with the outside radius larger by two metal thicknesses and unwanted in most of the more "eye-exposed" products.

For "eye-exposed" products the outside radial must be small, so that when two braked parts are joined with the radials exposed, there is not a too large gap in-between. And for this work the male die is made almost sharp in its nose, the edge rounded at not more than $1/64$ inch radius; at the same time the female die work-bottom is narrowed to only the two thicknesses of the metal worked. When the ram descends, the metal wraps itself about the nose of the male die with practically no radius resulting on the inside of the angle—but the grain structure does congest along the outside radius, as shown in Fig. 4. (See Fig. 12 also.)

Avoid Cutting Into Metal

The pressure required for forming the aforesaid strip of metal to a 90-degree angle having not more than $1/64$ inch inside radius will increase to 500 tons. But by allowing for $1/32$ inch radius on the inside, only 300 tons pressure is necessary. The difference arises from lesser force required to wrap the metal around the radial nose of the die instead of "forcing" the metal to compress itself into the small area below the radius-less nose. In the use of these "sharp-pointed" male dies precaution must be taken not to cut into the metal. The adjustment of the ram-descent must be set to allow for at least the metal thickness between the striking point of the male die and the lowest point of the working portion of the female die. Needless to say, the congestion of the grain of metal into the small area of the radial shown in Fig. 4 and Fig. 12 renders this portion "hardened," and any reforming after the first operation is completed in these dies might result in breakage, the flange falling off.

The narrower the dies used, the more pressure will be required in forming the metal to a sharp angle. At any rate, the female die opening should be about eight times the thickness of the metal worked, and the working portion of the male die should have the same width. The decrease in pressure necessary to make the bend in wide dies is due to the following: in wide dies the forming and the grain flow starts much earlier than is the case in the narrow dies. In the narrow dies the forming must take place instantly, with that much greater force expended, while in the wide dies the process is by stages, with less force expended in the gradual dislocation and congestion of the grain.

Fig. 5 pictures by over-emphasizing the distortion what happens if we use a narrow male die to descend into a wide open female die. The tendency of metal struck by the narrow male die is to "wrap" itself about that die, as shown in the picture. Contrary wise, if we operate with a wide male die and a narrow female die, the tendency will be reversed; the metal will bend over the edges of the narrower die, as shown in Fig. 6. Therefore, it is best to select dies having the same working area, as shown in Figs. 4 and 4. This will not apply, however, to using a narrow, pointed male die in a wider "V" die in formation of the "air-bend" kind, because in these bend

the grain displacement is a minimum and does not reach far enough to cause "bending" above the point struck.

In Fig. 7 we illustrate another tendency of the metal which needs guarding against. It is the forming of "loops" in a female die which has too large a radius cavity. The struck metal follows the law of "least resistance." If there is ample room in the female die into which to flow on being struck, the metal will fill the cavity, because in doing so practically no dislodging of the grain occurs, while the wrapping of the metal about the male die nose-point would call for considerable movement of the grain. To straighten out these loops in the metal will require more pressure than is required in doing the job in die-set shown in Fig. 4.

Narrow Dies for Narrow Flanges

In Fig. 8 is shown a die set-up for a *narrow flange formation*. It should be observed in this connection what we said in the preceding text about "the narrower the dies, the more pressure is required." Short pieces of 12-gauge mild steel might be worked to a $\frac{3}{8}$ -inch wide flange, but lengths exceeding 6 feet of that same gauge will be difficult to brake satisfactorily on less than $\frac{1}{2}$ -inch marginal area, because the female die "bed" on which the stock reposes prior to being struck by the male die must be wide enough to prevent the material slipping off it. But if we work lighter gauges, the flange width can be less than $\frac{3}{8}$ inch on pieces over 6 feet, provided the "bed" of the female die next to the gage is wide enough to support the metal. It is evident by observing the set-up in Fig. 8 that the "V" cavity in the female die must center on a point equal or exceeding the width of the desired flange. In other words, the striking point of the male dies is away from the gage to a distance equal to or exceeding the width of the desired flange, with the center of the working portion of the female die immediately below it. For narrow flanges it is necessary to select narrow dies.

As the metal *thickness* has a bearing on the *excess distancing* of the dies from the gage, the operator should observe the law of "shrinkages" in metals, in part explained under Figs. 11 and 12. A safe measure for these shrinkages is in 90 degree sharp bend, in

$\frac{3}{8}$ " Wide flange set-up

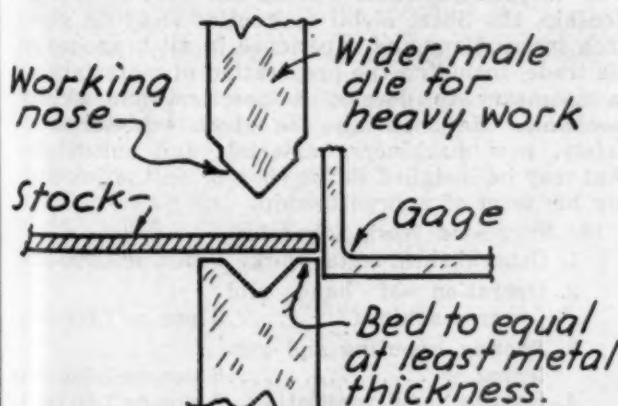


Fig. 8

Dislocation of Grain Structures in Metal Bends

Soft metal grain structure

Fig. 9

Hard metal grain structure

Fig. 10

Expanded grain

Compressed grain in radius bend

Fig. 11

Compressed grain in sharp bend

Fig. 12

mild cold rolled steel, the shrinkage will be a full metal thickness; in softer metals it will be more than that; in soft copper or lead the shrinkage will be *double* the thickness; in harder metals it will be *less* than the metal thickness. In bends having a full inside radius the shrinkage will be almost one-half less than is consumed in the bend having a minimum of inside radius. In bends of less than 80 degrees it is safe to figure one-half of the above shrinkages, and in bends less than 45 degrees one-fourth of the shrinkages will apply. A "Table of Shrinkages" will be reproduced in a subsequent article.

Grain in Metal

Roughly, metals are composed of *grain*, tenaciously sticking one to the other. But between the grain there are *spheres*, which are larger in soft metals and smaller in hard metals. A sheet of cold rolled steel is simply a sheet of hot rolled steel in which the "spheres" between the grain were diminished by rolling the sheet through *compressing* rollers. The oftener we roll the sheet in its cold state through the compressing rollers, the smaller will be the "spheres" separating the grain, and the sheet will be that much "harder" to bend. Soft metals are composed of grain with large "spheres" in-between. Hard

(Continued on page 130)

National Apprenticeship Standards For the Sheet Metal Trade* [Part I]

The Sheet Metal Contractors' National Association, Inc., the Apprentice Training Service, the U. S. Office of Education, Trade and Industrial Training Service, and the Sheet Metal Workers International Association, having jointly resolved to establish trade training for apprentices in accordance with the recommendations of the Federal Committee on Apprenticeship, have collaborated in the preparation of these standards for the administration of trade training that will provide apprentices in the Sheet Metal Industry with opportunities to attain high efficiency, versatility, and true craftsmanship that will constantly raise the level of workmanship in the trade generally and finally develop the necessary background for good upright citizenship.

1. Definition of "Sheet Metal Apprentice": A "Sheet Metal Apprentice" shall mean a young man at least 16 and not over 21 years of age who has agreed to work and learn the Sheet Metal Trade, in accordance with the following standards, and who with his employer has signed a written apprenticeship agreement, which said agreement has been approved by the Local Joint Sheet Metal Apprenticeship Committee, and which shall be registered with the Federal Committee on Apprenticeship. Except returning Veterans of World War II, age limits to be extended.

2. Qualifications for Apprenticeship Applicant: Applicants for a Sheet Metal Workers Apprenticeship must be at least 16 and not over 21 years of age and should preferably have a high school education or its equivalent and not less than the 10th grade. Exception may be made by the Joint Apprenticeship and Training Committee for those who have been engaged in the trade or who have unusual qualifications, or are returning Veterans of World War II, qualifying for extension under the G.I. Bill of Rights.

- (a) Application for Sheet Metal Apprenticeship.
- (b) Birth Certificate.
- (c) Transcript of School Courses and Grades.

3. Qualifications of Contractors: An employer to be eligible to employ a Sheet Metal Apprentice must have been actively engaged in the Sheet Metal business for a period of not less than one year. He must also be a regular employer of sheet metal workers and have at least one (1) journeyman employed for not less than 39 weeks per year.

4. Number of Apprentices Ratio: The ratio of Sheet Metal Apprentices to journeyman shall be one (1) apprentice to one (1) journeyman regularly employed and one (1) additional apprentice to each three (3) additional journeymen. This ratio may be adjusted by the Local Joint Committee, subject to the approval of the State Industrial Committee, to meet the needs of their locality; at no time shall there be more apprentices indentured than the trade will actually absorb.

*Prepared by the National Committee on Apprenticeship Training, Sheet Metal Contractors National Ass'n; Frank Kramer, chairman.

5. Child Labor Permits: Indentured apprentices need not secure a child labor permit if their industries have been approved by the State Industrial Commission.

6. Hiring of Apprentices: Employers desiring apprentices shall make application for said apprentices to the Joint Apprenticeship Committee. The apprentice may enroll his name with the Joint Apprenticeship Committee for the purpose of employment when available.

7. Obligation of Apprentice: The applicants must appear before the Joint Apprenticeship Committee for the purpose of determining their qualifications before signing the Apprenticeship Agreement blank. Local or District Committees to make recommendations.

8. Term of Apprenticeship: The term of apprenticeship shall be not less than five years and no less than 10,000 hours of reasonably continuous employment of combined work and related instructions. It shall be divided into ten (10) six-month periods of approximately 1,000 hours each, the first four months being a probationary period, during which time either employer or apprentice may void the indenture upon written notice for causes deemed adequate to the Joint Apprenticeship Committee.

9. Work Experience: During the term of apprenticeship, the Sheet Metal apprentice shall be given such instructions and experience in all branches of his trade, including the preparation of materials, as is necessary to develop a practical and skilled mechanic. He shall also be given experience in safety, new machinery, materials and substitutes that may be installed in the shop or on the job during his term of apprenticeship.

10. Suggested Work Schedule:

- | | |
|---|----------------------|
| 1. General sheet metal work | 6 mos. or 1,000 hrs. |
| 2. Operation of hand and power machines | 6 mos. or 1,000 hrs. |
| 3. Roofing, spouting and guttering | 6 mos. or 1,000 hrs. |
| 4. Heating and ventilating | 6 mos. or 1,000 hrs. |
| 5. Air conditioning | 6 mos. or 1,000 hrs. |
| 6. Exhaust and blow pipe work | 6 mos. or 1,000 hrs. |

7. Skylight and specialty work 6 mos. or 1,000 hrs.
8. Welding, arc and gas 6 mos. or 1,000 hrs.
9. Erection in sheet metal 6 mos. or 1,000 hrs.
10. Gravity heating, service work on gravity and forced system 6 mos. or 1,000 hrs.

It is important that in the above outline he shall be given such training over the period of his apprenticeship in soldering, brazing and welding that is necessary for a sheet metal journeyman. Also allowance for variable conditions may be necessary in the types of work for effective training.

11. Related School Instruction: In addition to the training received on the job, the apprentice shall attend school one day each week with pay for said day during his apprenticeship except during trade school vacation and 120 days of his probationary period. The time spent in school shall be a part of his apprenticeship. The total number of days spent in school shall be 150 days and this is to be attended in the first four years of his apprenticeship.

(1) Special provisions may be granted in hardship cases. Also the apprentice shall attend night school on his own time at least two nights per week while schools are in session for the entire term of apprenticeship in addition to the regular daytime school, and take such subjects as the Joint Apprenticeship Committee and the employer deem advisable.

APPLICATION FOR SHEET METAL APPRENTICESHIP

(To be submitted to the Sheet Metal Apprenticeship and Training Committee)

Date 19.....

Name of Employer
Name of Applicant
Address
Telephone Age Height Weight
Place of Birth Date
Married or Single Have you proof of age
(Present proof of age with application)

Previous Employment:
Company Address
No. of months or hours Kind of work
Company Address
No. of months or hours Kind of work
Company Address
No. of months or hours Kind of work
Educational background:
No. of years in grammar school No. years in high school
Other training (correspondence, night, trade school, etc.)

Have you ever been convicted of a crime?
Reason for choosing this trade
Are your parents living? Do you live with them?
Father's occupation
You shall submit evidence of a recent physical examination.

References:
Give the names and addresses of three responsible persons, relatives, who have known the applicant for at least three years:
Name Address
Name Address
Name Address
Phone
Phone
Phone

Name Address
Name Address
Name Address
Phone
Phone
Phone

(Signature of Applicant)

Form to be used where prospect has had some previous sheet metal or allied training.
Form is filed with Committee by prospective employer.

SHEET METAL JOINT APPRENTICESHIP COMMITTEE APPLICATION FOR APPRENTICESHIP

Name Date

Last First Middle

Address Street Address City State

Birth Date: Age Soc. Sec. No.

Place of Birth City State

Telephone Height Weight

School Grade Completed 1 2 3 4 5 6 7 8 Name of

Encircle Highest Grade
Completed 9 10 11 12 Addr.....

Other Schooling Parent or Guardian Name Addr.....

Citizenship: American Naturalized 1st Papers

Married or Single Dependents

References: (Give names and addresses of two persons, other than relatives, who have known you at least two years.)

Name Address

Name Address

If my application is accepted, I agree to comply with all the terms and conditions of the Sheet Metal Apprenticeship Committee.

(Signed)

Approved by the Joint Committee

Form to be filed by applicant without any training.

(2) The related classroom instruction shall be under the direction of the Department of Vocational Education. The Sheet Metal Joint Committee shall act as an advisory and consultant body in determining subjects to be taught and any other problems pertaining to related education of the Sheet Metal Apprentices.

12. Curriculum to Be Taught in the School:

CLASS SCHEDULE, SHEET METAL WORKING

FIRST YEAR First Semester

Course	No. of Periods per week
Technology (shop)	18
Mathematics	18
Drawing	18
Science	18
Industrial Economics	18
Technical English	18
Assembly (all classes)	18

Second Semester

Technology	18
Mathematics	18
Drawing	18
Science	18
Industrial Economics	18
Technical English	18
Assembly	18

SECOND YEAR

First Semester

Technology	18
Mathematics	18
Science	18
Drawing	18
Industrial Economics	18
Technical English	18
Assembly	18

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or 1,000 hrs.
or 1,000 hrs.

MASTER'S QUALIFICATIONS

- Name of Master..... Date.....
- I. Length of time operating in sheet metal business.....
- II. (a) How many journeymen do you employ regularly?
 (Regular employment means 39 weeks, or 1560 hours, or more per year)
 (b) How long and how steadily have they worked for you?
- III. Why do you desire an apprentice?
- IV. Nature of work.....
- V. Do you keep books and records of costs?.....
- VI. (a) Have you ever had an indentured apprentice under contract?
 (b) Did he complete his apprenticeship?
 (c) If not, why not?
 (d) Do you still employ him?
- VII. (a) Do you contribute under the Social Security Act?
 (b) What type of liability insurance do you carry?
 (c) Do you carry compensation insurance?.....
- VIII. Itemize the major sheet metal equipment in your shop, exclusive of cars and trucks.....
- IX. Are you willing to appear before the Committee when called upon for examination of your apprentice and present his time records to the committee for examination?
- X. Are you willing to abide and comply with the existing rules and regulations of the Local Joint Sheet Metal Apprenticeship and Training Committee?.....

(Signature)

The employer must also meet certain standards. This is his application to work apprentices.

Second Semester

Technology	18	2
Air Conditioning and Refrigeration...	18	2
Drawing	18	4
Industrial Economics	18	2
Technical English	18	1
Assembly	18	2/3

THIRD YEAR

First Semester

Welding	18	4
Drawing	18	2
Air Conditioning and Refrigeration...	18	2
Industrial Economics	18	2
Assembly	18	2/3

Second Semester

Welding	18	4
Drawing	18	2
Ventilating	18	2
Duct Design	18	2
Technical English	18	2
Assembly	18	2/3

School day—7:30 a. m.-4 p. m.

Lunch period—12:00 noon to 12:30 p. m.

Assembly period—12:30 p. m.-1:00 p. m.

Length of class period—45 minutes.

13. Wages for Apprentice:

First six months, 1,000 hrs., 30 per cent of prevailing journeymen's rate.

Second six months, 1,000 hrs., 35 per cent of prevailing journeymen's rate.

Third six months, 1,000 hrs., 40 per cent of prevailing journeymen's rate.

Fourth six months, 1,000 hrs., 45 per cent of prevailing journeymen's rate.

Fifth six months, 1,000 hrs., 50 per cent of prevailing journeymen's rate.

Sixth six months, 1,000 hrs., 55 per cent of prevailing journeymen's rate.

Seventh six months, 1,000 hrs., 60 per cent of prevailing journeymen's rate.

Eighth six months, 1,000 hrs., 65 per cent of prevailing journeymen's rate.

Ninth six months, 1,000 hrs., 75 per cent of prevailing journeymen's rate.

Tenth six months, 1,000 hrs., 90 per cent of prevailing journeymen's rate.

14. Apprentice Record Card: A master record of the apprentice's work experience and related instructions shall be kept by the employer and the Vocational School authorities.

15. Supervisor of Apprentices: The employer shall designate a particular person in the shop (this may be a foreman, journeyman or shop steward) to be known as the "Supervisor of Apprentices."

16. Agreement of Apprentices' Hours: The hours of work for the apprentice shall be the same as those of a journeyman.

17. Apprentice Work Card: The apprentice shall carry a working card signed by the Chairman of the Joint Apprenticeship Committee and the secretary of the Local Union or Employers Council.

18. Periodic Examinations: Before the expiration of each six-month period, the apprentice shall have satisfactorily completed his specified course with a statement from his vocational school instructor and a report from his supervisor of apprentices. The committee shall examine the apprentice's record and determine whether the work specified for that period has been completed in a satisfactory manner before the apprentice be advanced to the next period. The foreman shall have the right to appear at any and all examinations.

19. Apprenticeship Agreement: The apprentice and his parent or guardian (when he is a minor) shall sign an agreement which shall also be signed by the employer and the State Industrial Committee, approved by the Joint Apprenticeship Committee and registered with the Federal Committee on Apprenticeship. Every apprenticeship agreement entered into, under these standards, shall contain the provision shown in the sample agreement in Part A for the reason that every apprentice, parent or guardian and employer entering into an agreement shall be given an opportunity to read the standards.

The following shall receive copies of the agreement: (1) the apprentice; (2) the employer; (3) the union; (4) the Joint Apprenticeship Committee; (5) the Federal Committee on Apprenticeship.

20. Composition of Joint Apprenticeship Committee: The Joint Apprenticeship Committee is composed of an equal number of members of the Employers Association, Sheet Metal Workers Association, the State Industrial Commission and registered with the Federal Committee on Apprenticeship. Each association entitled to equal vote.

[Part 2 will appear in August]

Revere Copper and Brass Incorporated

EXECUTIVE OFFICES

230 PARK AVENUE
NEW YORK CITY



CHARLES A. MACFIE
VICE-PRESIDENT

RECONVERSION

TO THE TRADE:

As the smoke of war dies down over Europe, the air here at home is clearing also. Revere will soon be able to ship moderate quantities of copper and brass products to Revere Distributors, and the following policies will apply:

Sales Through Distributors Only.

Revere will continue its policy of selling sheet metal contractors through established distributors only. Revere does not and will not compete with its own customers.

A Fair Share To All.

With the rising tempo of the war in the Pacific, it is obvious that Revere's limited civilian output could be entirely absorbed by a few distributors, leaving others unsupplied. It would be easy to play favorites, especially with an eye on distributors new to Revere who promise large future volume.

But Revere will play no favorites.

What we are able to supply, while meeting the prior demands of war, we will share with you fairly. And we will see to it that established Revere Distributors are not neglected.

Turnabout is Fair Play.

In return, we ask your cooperation. We want Revere Distributors to be the best in their respective territories. So naturally we want to see each Revere Distributor operate along the most modern merchandising lines, with well-informed salesmen, and all the other fundamentals of good business—so as to take full advantage of Revere's advertising and promotional program to architects, the trade, and the public.

Between us, by working together in this way, we are sure that you and Revere can share the full benefits of the great era that lies ahead.

REVERE COPPER AND BRASS INCORPORATED

A handwritten signature in black ink, appearing to read "Charles A. Macfie".

Vice President—Merchandise Sales

BALTIMORE DIVISION, BALTIMORE, MD. . . . DALLAS DIVISION, CHICAGO, ILL. . . . MICHIGAN DIVISION, DETROIT, MICH.
ROME DIVISION, ROME, N.Y. . . . TAUNTON-NEW BEDFORD DIVISION, NEW BEDFORD, MASS.

National Warm Air Heating and Air Conditioning Association

Mid-Year Meeting of Board of Directors and Committees

Advertising and Dealer Training Programs Dealer and Jobber Division Membership Drive

BECAUSE of travel restrictions, the mid-year meeting of the Warm Air Heating and Air Conditioning Association was cancelled—instead committee meetings were held in Chicago and Urbana. The Board of Directors, meeting in Chicago, transacted necessary business and participated in discussions on the proposed national advertising and dealer training program and ways and means of building a strong dealers and jobbers divisions.

The Proposed Program

The proposed national advertising program, under the guidance of the Publicity and Merchandising Committee, has reached the approximate half way mark in obtaining an underwriting of \$200,000 to conduct the campaign. American Artisan has reported the progress of the campaign regularly since the inauguration of the program at the December, 1944 meeting, so readers should know most of the details.

In brief, this advertising program is designed to protect the great preference for warm air heating and to tell the merits of warm air heating to architects, builders and home owners. A most important feature of this program is the building of a strong affiliated dealers division—with dealer education to insure that the knowledge obtained from more than twenty years of warm air research will be incorporated in better heating installations after the war.

The Dealer Division

This dealers division was officially launched at the December, 1944 meeting—as reported in American Artisan. At the June meeting it was reported that memberships in the dealers division are coming in steadily, but to insure success of the program more dealer members are needed before the end of the year. Ways and means to stimulate membership were discussed and will be reported later.

At the December meeting Hugh Thompson of Cincinnati was elected chairman of the dealers division with an executive committee composed of: Homer Selch, Indianapolis; Jack Stowell, Aurora, Ill.; George Kalvog, Chicago; Dan Schmidlin, Toledo; Ray Turnbull, Detroit; Michael Devino, Waterbury, Conn.; Elmer Schartow, Midland, Michigan.

Membership Drive

These executive committee members were asked to organize a membership drive in their respective areas. At the June meeting these members reported their campaigns in various stages of progress. Typical of the efforts, George Kalvog mailed letters and information to about 2,000 dealers in his area. His letter explained the proposed advertising campaign, the educational program for the dealers, the booklets, helps, engineering schools and other objectives of the campaign.

The Jobber Division

At the annual meeting held last December, a Jobbers' Division was formed and an executive committee was elected. The following members and a few representatives have taken assignments, including contracts with other jobbers, for the purpose of obtaining jobber subscriptions to the proposed program:

Oscar Brauer, A. G. Brauer Supply Co., St. Louis, Mo.—Southern Illinois.

John J. Moran; Baker Specialty & Supply Co., Logansport, Indiana—Most of Indiana, with the exception of Indianapolis.

Al Nemic, Nemic Supply Company, Indianapolis, Ind.—City of Indianapolis.

Ray J. Lorenz, Chicago Furnace Supply Co., Chicago—Northern Illinois.

R. K. Becker, Ohio Valley Hardware & Roofing Co., Evansville, Ind.—Southern Indiana and all territories south of Ohio River.

Fred R. Green, Des Moines Stove Repair Co., Des Moines, Iowa—Iowa, Minnesota, North and South Dakota.

A. K. Anderson, Anderson & Krapp, Toledo, Ohio—All of Ohio.

Arthur M. Vorys, Vorys Brothers, Columbus, O.—Western Pennsylvania.

Campaign Results

At the June meeting the following report of the advertising campaign was released:

Subscriptions (to June):

64 Manufacturers	\$ 69,000
50 Jobbers	7,100
261 Dealers	18,000
	_____ \$ 94,100

Needed:

Manufacturers	\$100,000
Jobbers	22,000
Dealers	78,000
	_____ 200,000

Some members of the Board of Directors agreed to call on manufacturers who have not subscribed—about 25 such manufacturers will be called upon before September.

At the close of the sessions the job ahead looks about like this: (1) an additional 1,000 dealer memberships are needed; (2) of the probable 250 jobbers who derive a large share of their business from warm air heating, some 200 must be sold memberships and participation; (3) as the war end approaches speed is necessary if the program is to be ready to launch on V-J day; (4) if possible, all the \$200,000 should be subscribed by November, 1945.

George Boedderer, Managing Director.

Attention

GAS FURNACE AND FLOOR FURNACE USERS

Immediate repair and maintenance service for gas space-heating appliances is not always available because of today's manpower shortage.

Get ready for next heating season—order necessary inspections, repairs and replacements TODAY.

Delays of from one to three months may be expected. Avoid suffering from this delay next fall when the comfort and warmth provided by your gas heating equipment is essential to your family's health.

Call your regular heating service agency NOW—or consult the Heating sections of The Classified Telephone Directory.

This Notice Published by

INSTITUTE OF GAS HEATING INDUSTRIES

In order that the public may be advised of the manpower and material shortage in the heating equipment service industry.



Left: Advertisement which appeared in April last year; and (above) follow-up advertisement which appeared the week of August 20, 1944.

Similar advertisements will appear in June and August, this year.

Los Angeles Organization to Improve Standards of Gas Heating Installation

the warm air section were discussed in detail between the Board of Building and Safety Commissioners and representatives of the Institute. This code is about ready for adoption and as soon as it is in effect, several other adjacent cities have stated that they will adopt the code in its entirety.

At most meetings a prominent speaker is present. In the past various officials from the local government offices have given very informative talks and assisted members in more fully understanding War Production Orders, Office of Price Administration Orders, and various other regulations.

Quite frequently a motion picture is shown for entertainment.

Classes have been and are now being held for the instruction of heating installation men, and at present there is a waiting list for enrollment.

Members of the Gas Companies and of the Heating Companies are appointed by the Institute as instructors who willingly give of their time.

Each year the Institute stages a Hi-Jinks and you can be sure everyone is there.

Advertising Campaign

During the war emergency on account of the manpower shortage, the Institute in conjunction with the Southern California and Southern Counties Gas Companies stage a campaign to urge gas users to call their heating man for service as early in the summer as possible instead of putting off until fall which would necessitate many waiting for several weeks when the heat is needed most.

Twice a year an advertisement is inserted in more than forty newspapers in and adjacent to Los Angeles calling people's attention to the importance of having their appliances serviced as early as possible. This year a similar ad will appear between June 10th and June 20th and another between August 20th and September 1st.

All heating companies are asked to keep a record of calls which they receive for service which can be attributed to these ads. This program has worked very successfully the last two years.

The meetings of this organization have been held regularly on the second Thursday of every month and are well attended. There is not a member who does not say that it is well worth it.

The present officers are:

Lou M. Hull, Hammel Radiator Engineering Co...President
Frank W. Lawson, Coleman Lamp & Stove Co. Vice-President
C. A. Gabriel, Monarch Heating Co.....Secretary-Treasurer

Installation Practices

On the other hand, installation of these approved appliances is controlled only through city ordinances, which vary radically in the various localities, and in many cases are not sufficiently founded on present available knowledge to insure safe and satisfactory heating.

A simple method of calculating heat losses in residence heating was developed through cooperation of engineers of the local gas companies and members of the Institute, based on methods and factors of the American Society of Heating and Ventilating Engineers. This method was published in the form of calculation sheets which were used by salesmen or heating engineers which enabled them to save time in estimating.

The Institute gave immeasurable assistance to members after Pearl Harbor assisting in the conversion of plants from peace time to war time activities.

A new and comprehensive Heating Ordinance has been prepared for the City of Los Angeles and all phases of

ASSOCIATION ACTIVITIES

Fox Valley

The Fox Valley Furnace & Sheet Metal Contractors Association, Illinois, will hold a field day on July 24 at St. Andrews Golf Club, north of West Chicago, on Route 59, North of Illinois 64.

Chicago

Furnace Air Conditioning Sheet Metal Institute, Chicago, will hold their annual picnic and outing at Long Lake Park, Long Lake, Illinois, on Sunday, July 22. The event will be financed by ticket sales.—Tom Novak, Chairman, 1928 Fullerton Avenue, Chicago. Phone Humboldt 4588.

Indiana

The Sheet Metal and Warm Air Heating Contractors' Association of Indiana, Inc., sent a bulletin to members on June 15, headed by the names and addresses of the officers and directors of the association, and giving a resume of the meetings and happenings.

The annual convention was postponed until February of 1946. Members were invited to send in the names of dealers in their city and surrounding locality, eligible to join the association, that the association might have an up-to-date mailing list of prospective members. The association has 104 paid up memberships.

The Policy Committee reported progress on the bills before the legislature and thanked members who wrote letters to their senators and representatives to support the bills that were beneficial to the Indiana organization.

The organization committee reports that they checked state association papers, made necessary changes, and filed all papers with the Secretary of State.

A Committee was appointed to revise the By-Laws and bring them up to date. It was voted to hold four meetings a year of the officers and Board of Directors so that the business of the organization could be discussed and carried on profitably to its members.

E. L. Carr, H. W. Meggs, Frank Mutz and Herman Schmid were appointed to serve on the Policy and Membership Committee.

Unemployment compensation forms 501, to be made out by employer for every employee leaving his employ with reasons of separation in detail, is discussed as well as a school for apprentices over the state.

The association has been for the advancement of the furnace and sheet metal industry and to foster and encourage the organization of state and local associations; to provide a clearing house for the collection, correlation and dissemination of information of value; to promote high standards of practice, to provide adequate state representation in dealing with government agencies, other industry groups, other trades and in handling industrial relations; to institute wide-spread and well coordinated studies of present and future problems and to generally promote the welfare of the industry to the extent possible and permissible for our interest.

Suggestion was made at the close of the meeting that the next meeting of the officers and directors be in New Castle, August 4th, to make plans and take up details of holding convention in February, 1946, and appoint the different committees for that work.

Homer Selch, Secretary.

New York State

The New York State Sheet Metal, Roofing and Air Conditioning Contractors' Association, Incorporated, affiliated with the Sheet Metal Contractors' National Association, Inc., is distributing a classified advertisers' and buyers' guide for 1945-1946. Members of the Merchandisers Association are indicated and the presidents and secretaries of both the contractors' and merchandisers' groups are listed.

Clarence J. Meyer, Secretary.

Saginaw Valley

On Wednesday, June 20, 1945, the Saginaw Valley Sheet Metal Roofing and Heating Contractors held their third Annual Picnic at Old Heidelberg Gardens for their employees. Approximately 100 men attended. Baseball was played and contests were held. A number of prizes were donated by various jobbing houses. Ed. Wilson did a good job as umpire for the baseball game—we believe Ed. missed his calling.

Harold Catheart won the \$50.00 bond and Walter Shartow won the \$25.00 bond which were donated by Jackson & Church Company.

A buffet luncheon was served at 6:30 o'clock and later in the evening movies were shown. Ed. Wilson of Grant Wilson furnished liquid refreshments.

We want to thank all the supply houses and out of town guests that helped us with their support to make a successful picnic. Chairman Floyd McCoy assisted by Elmer Shartow, Arthur Lange, Marshall Vallette and Alfred Klopf were in charge of the picnic.

Our next meeting will be held in September.

Alfred M. Klopf, Secretary-Treasurer.

New York City

The May, 1945, *Institute Ticker*, published by Roofing and Sheet Metal Crafts Institute, Inc., mentions an organized retraining program for postwar work, with basic ideas, and awaits further comment to formulate a program which would tend to strengthen the ability of concerns to turn out a better job and earn higher recognition for our trade in general.

Thomas J. Wynne, chairman of the board of directors of the Institute, and a former president, was honored recently by a testimonial dinner at the Thirty-Two Club. More than seventy-five guests attended. Eugene L. Packer, chairman of the entertainment committee which arranged the affair, acted as toastmaster. Lawrence C. Corvi, president of the Institute, presented Mr. Wynne with a beautiful Hamilton watch, on behalf of the association and told a few of the accomplishments of his predecessor. The affair took on the atmosphere of a home party. Songs were rendered by Mrs. Downey, Paul Southworth and Jim Ryan. A serenade was rendered by Mr. Ryan and Mrs. Wynne, Sr.

Louis S. Goldberg, a partner in the Standard Tinsmith & Roofer Supply Corp., 183 Christie St., New York, passed away April 25, following a brief illness. The firm will now be run by the sons-in-law of former partner Joseph Ellman, Samuel Fishkind and Jack Leslie.

Eugene L. Packer, Corresponding Secretary.

(Continued on page 106)



Stop Adapting..

GET THE WELDER DESIGNED
TO DO THE JOB!



Westinghouse Model WC-AC
Flexarc Welder

NEED AN ALL-PURPOSE WELDER?

Westinghouse Model WT-4C A-C Welder is an excellent and sturdy machine for all around service and light-duty production welding. Generously designed and easily portable, this welder with high power factor can cut costs and speed up service on all kinds of welding jobs. Twenty-seven steps of current adjustment from 20-250 amperes.

This new Westinghouse high-frequency stabilized a-c welder meets the need for a welder that can weld light sheet metal. It was designed and intended first for the aircraft industry so that thin-wall tubular fuselage members, tubular clusters on engine mounts and landing gear could be welded satisfactorily and economically. With it, there is no need to "adapt" welders designed for other types of service.

CHECK THESE FOUR POINTS:

1. Operator can strike and maintain arc easily over entire range of welding on light work. High-frequency stabilized arc keeps current constant, prevents burn-through.
2. Easy stepless current adjustment from 10-200 amperes.
3. Welds all types of alloys as readily as carbon steel.
4. High efficiency and power factor.

Call your Westinghouse Welding Distributor, or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pa.

J-70444



Westinghouse
PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

A-C WELDERS

Equipment Developments

38—Recording Thermometers

Taylor Instrument Companies, 31 Ames Street, Rochester 1, New York, advises that the Taylor Portable Recording Thermometer is now back on the market.

To assure accuracy, the preformed capillary bulb which is attached to the back of the case is insulated in



such a way that the recorded temperature is not affected by the temperature of the case itself.

Taylor Portable Recording Thermometers are available with numerous standard chart ranges within the following temperature limits: mercury-actuated instant, minus 38 to plus 200 deg. F.; vapor-actuated, 0 to plus 300 deg. F. or equivalent C. The instrument weighs 18 pounds and measures 20 $\frac{1}{4}$ in. high, 13 $\frac{3}{4}$ in. wide, and 6 $\frac{1}{4}$ in. deep.

• 39—"Non-Spatter"

The Lincoln Electric Company, Cleveland 2, is introducing a liquid designed to minimize the adherence of welding spatter to metal and reduce cleaning time. "Non-Spatter" film, priced at only a few cents a quart, has been thoroughly tested in the field and found to possess the following characteristics:

Welding can proceed after application, whether the film is still wet or dry; film can be sprayed or painted on work; priming coats of paint may be readily applied over the film; film can be removed by

washing with water; one application of film is effective for multiple-pass welding; if film is sprayed or painted on parts prior to being normalized, the oxide film and ordinary scale can be removed more easily after heat treating; material will freeze but freezing has no effect on its properties when thawed.

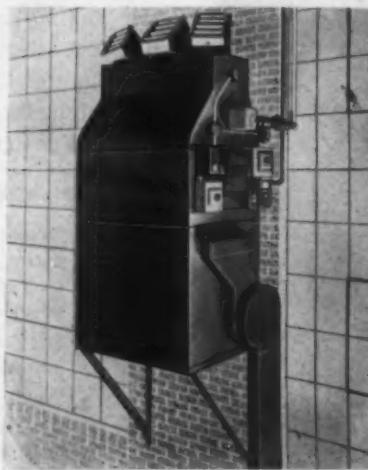
Lincoln "Non-Spatter" Film is supplied in concentrated form in 5 gallon cans for the convenience of the user. By diluting the concentrated material with three parts of water, 20 gallons of film fluid is obtained.

• 40—Direct Fired Heater

Dravo Corporation, Pittsburgh 22, announces a new, compact, heat-producing and distributing unit, burning either gas or oil and designed especially for suspension from walls or roof trusses.

The new design, called Dravo Direct Fired Heater, suspended type, is intended for use in cases where floor space is not available.

Warm air from the heater can be discharged in any direction by regu-



lating the adjustment of the nozzles. There are directional louvres on each nozzle to channel the flow up or down. The hot air is driven from the adjustable nozzles at velocities of 1800 to 2000 fpm, enabling the heaters to be located from roof trusses or wall brackets 30 or more feet above the floor, and still deliver their heat load efficiently to the working area.

Btu. output per hour capacities range from 300,000 to 1,650,000 depending on size of heater.

For your convenience a number has been assigned to each item. Circle the items in which you are interested on the coupon on page 112 and mail to us.

△ Indicates manufacturer not listed in 1945 Directory.
● Indicates product not listed in 1945 Directory.

Combustion takes place in a tear-drop shaped combustion chamber, the lower half of which is lined with plastic refractory molded to the metal wall. An ingenious system of passes brings the air to be heated in contact with the heating elements four times.

Heaters are shipped from the factory complete with the refractory lining and all wiring in place.

41—Electro-Mist

American Air Filter Co., Inc., 215 Central Ave., Louisville 8, Ky., has introduced into their electronic line of air filtration equipment the Electro-Mist, a self-contained completely demountable electronic unit designed to collect oil mist from high speed cutting tools or welding fumes in light concentrations.

An axial flow fan mounted on top of the unit draws air from the operation



which is properly hooded thru piping or flexible tubing into the base of the unit. In its application to cutting operations, the mist-laden air first passes thru a permanent unit filter to remove any metallic dust or large drops of oil, then enters the ionizer in which the mist and smoke particles receive an electrical charge before passing into the collector unit where they are precipitated on the plates. The collected oil mist accumulates and drips off the lower edge of the plates, thru the filter and into a reservoir below. As much as 2 or 3 gallons of oil can be salvaged daily.

The Electro-Mist is made in one size—28 $\frac{1}{4}$ x 20 $\frac{1}{4}$ x 70 inches high. The power pack operates from nominal 115 volts 60 cycle single phase. On multiple installations one large power pack will handle as many as 10 Electro-Mist collectors.

THIS
EXCLUSIVE FEATURE
MEANS

*More
Profitable
Sales . . .*

FOR YOU!

Combustion Control System

with Exclusive Draft Regulator
Saves as Much as One Ton of Coal Out of Three
on Hand-Fired Installations

last, here is a control system for hand-fired heating that automatically regulates both room temperature and draft over the fire! New and sensationaly different, the Combustion Control System provides the exclusive feature of Draft Regulator to minimize heat loss up the chimney.

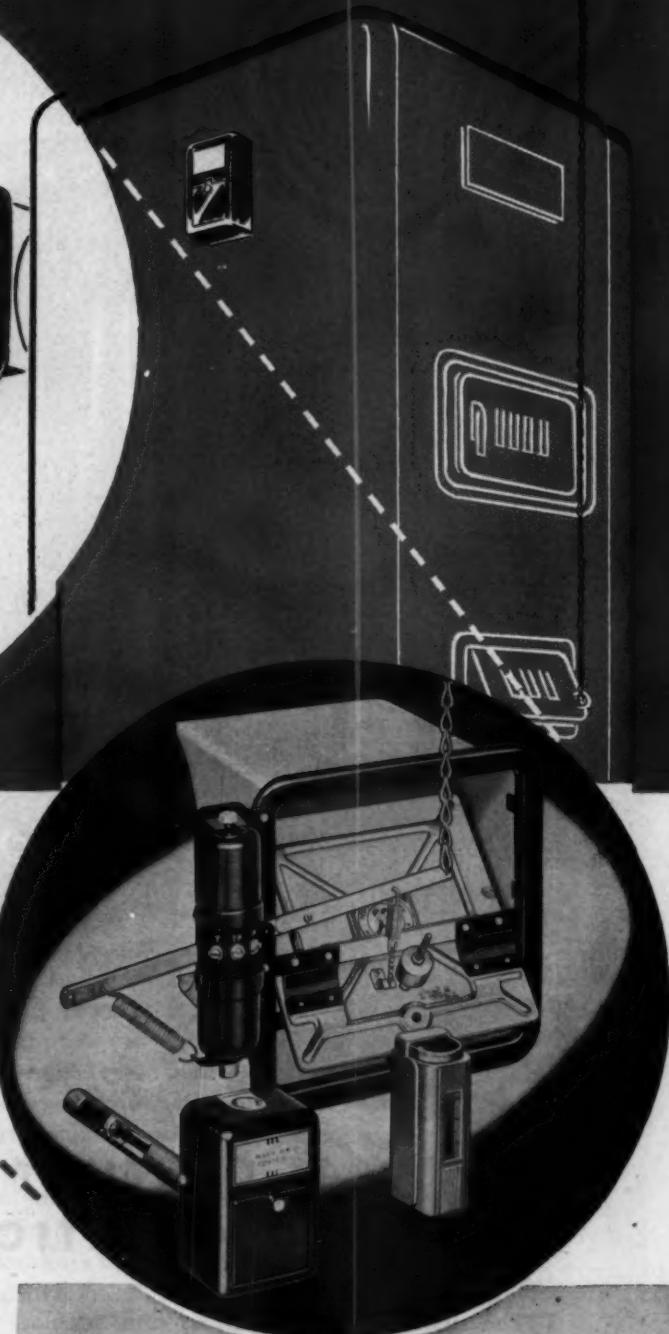
THIS CLOSEST APPROXIMATION TO AUTOMATIC HEATING

Now you can save customers as much as one-third on coal costs, and give them even, comfortable heat day and night—plus the convenience of fewer trips to the basement to tend the fire. Fuel burns more efficiently, clinkers are reduced and banks last longer.

It's started in this profitable business now. These summer months are your best selling season and your "reconditioning" calls offer an excellent opportunity to make extra profits selling and installing Combustion Control Systems. Write your heating equipment manufacturer today for his complete Merchandising Program to help you sell.

THIS SYSTEM CAN HELP YOU SELL NEW EQUIPMENT

Wouldn't you like to have the new furnaces and boilers you sell equipped at the factory with this powerful sales regulator? Then, ask your manufacturer to supply Combustion Control Systems on his products you handle.



ONLY THE COMBUSTION CONTROL SYSTEM CAN GIVE YOU ALL THESE SALES ADVANTAGES

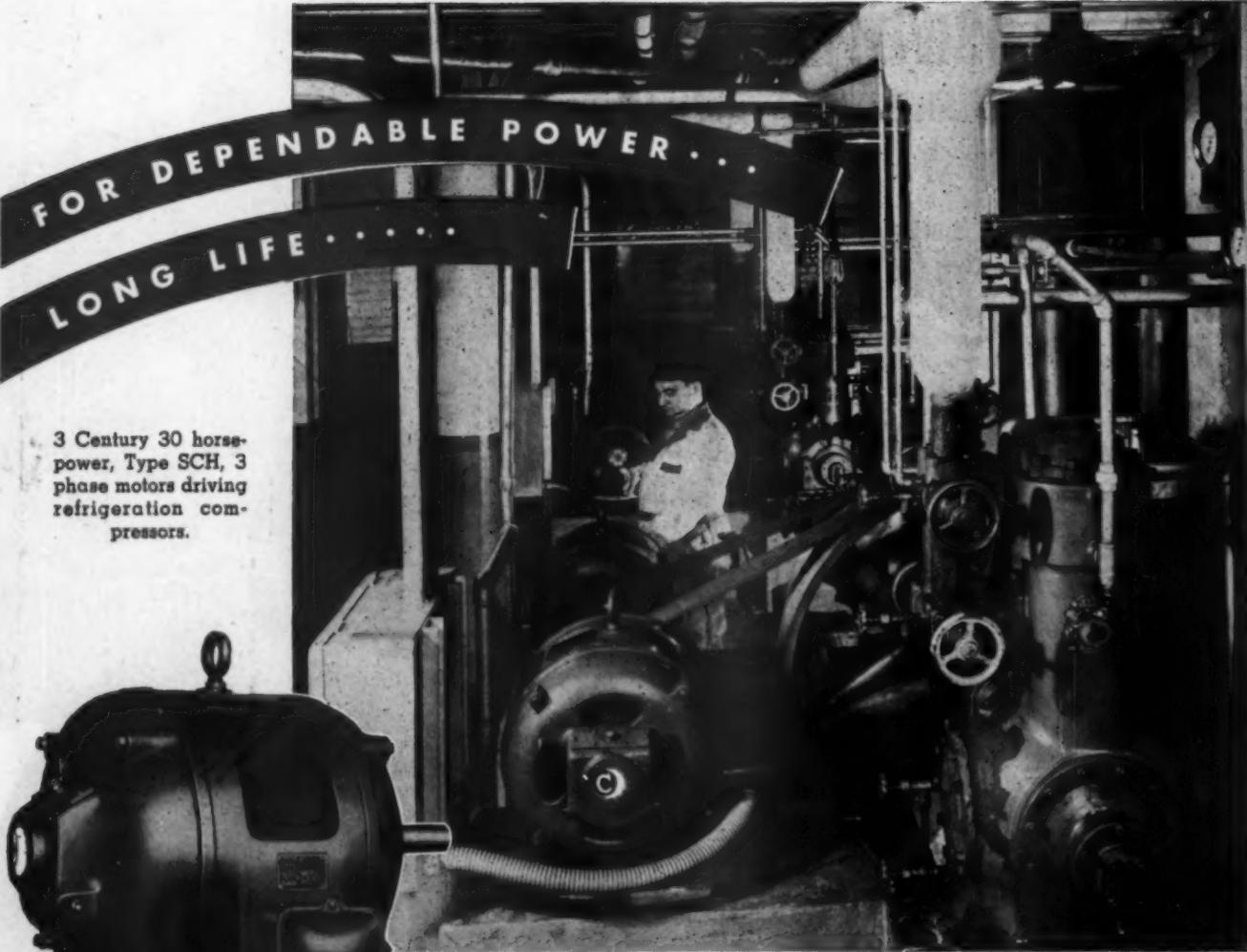
- Exclusive fuel-saving Draft Regulator automatically maintains most efficient combustion.
- Exclusive Thermo-Draulic Damper Operator (integral unit with Draft Regulator) is smooth and absolutely quiet in operation.
- Exclusive Magic Dial Thermostat has adjustment for setting "open damper" periods to suit individual comfort preferences.
- Precision Limit Control available for installations on warm air, hot water and steam plants.
- Same standard high quality controls used on fine stokers and oil burners—approved by Underwriters Laboratories.



Perfex

COMBUSTION CONTROL CO., 200 W. OKLAHOMA AVENUE, MILWAUKEE 7, WISCONSIN
MANUFACTURERS OF AUTOMATIC CONTROLS, HEATING TRADE-MARK NAMES OF LEADING PRODUCERS OF HEATING EQUIPMENT

Fuel-Saving
Starts With
CONTROL



3 Century 30 horsepower, Type SCH, 3 phase motors driving refrigeration compressors.

Be Sure You
**Use CENTURY SCH MOTORS
 ON REFRIGERATION COMPRESSORS**

The smooth, positive starting and accelerating characteristics and the high torque of Century SCH Polyphase Motors make them ideal for large refrigeration compressors. These motors have the ability to start heavy loads with low-starting current and to operate smoothly, day in and day out.

In addition to Type SCH Motors, Century offers a complete line of motors in a wide variety of sizes, 1/20 to 600 horsepower, and types both AC and DC to meet any heating, cooling, or

ventilating application. Among the advantages of these motors are the following: unusual freedom from mechanical and electrical vibration, quiet starting and operating, unique cushion bearing bumpers that reduce chatter from V-belt irregularities, cushion base mountings are available for motors 3 horsepower and smaller.

When you need an electric motor for operating compressors, pumps, blowers, fans, unit heaters, or any other similar application, investigate the advantages Century has to offer.



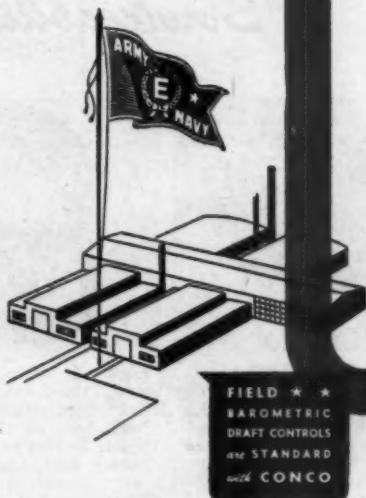
CENTURY ELECTRIC COMPANY • 1806 Pine Street, St. Louis 3, Missouri

Offices and Stock Points in Principal Cities



IT'S *Close* TO A
LOT OF HEARTS

CONCO
heat



NO, THIS IS NO EULOGY . . . but a hard-headed statement of policy that will interest ONLY the RIGHT kind of distributor: We CONCO folks share with all industry the responsibility for maintaining peak employment. And we're DOING SOMETHING ABOUT IT! First, came three years of war-time research which produced a stoker that leads the field. And second, as we go into production, plans are being laid to MERCHANDISE that stoker and our entire line aggressively. And we need keen, aggressive distributors . . . men who want to sell the BEST line and SELL IT HARD! Only a FEW territories remain open. And our franchises are available *only* to distributors who recognize their vital role in maintaining postwar prosperity. If you qualify, please write us. Our returning veterans and the men and women on our production lines are depending on men like you for their postwar bread and butter.

BUILDERS OF A COMPLETE HEATING LINE

- DOMESTIC STOKERS
- COMMERCIAL STOKERS
- GAS-FIRED AIRCONDITIONERS
- STEEL FURNACES
- OIL-FIRED AIRCONDITIONERS

CONCO ENGINEERING WORKS • MENDOTA, ILLINOIS



IT'S
THE NEW
CONCO
DOMESTIC
STOKER

HOT NEWS FOR YOU!

Toridheet Pressed Steel Burner NOW AVAILABLE

Model "S" Gun Type — Weighs 89 lbs. — half the weight of average burner. Weight saving means freight saving! Lower in price — lower cost of replacements



*Beauty • Efficiency
Serviceability*



The Model S oil burner is symmetrical and attractive in design. Because of its streamlined construction there are no exposed parts . . . no gadgets. Needs little space. Stands close to heating plant when installed. Glossy, lacquer finish.



Airometer air control. The air for combustion is metered so precisely the atomized oil is thinned to a minimum for low cost operation. An adjustable scroll (patents pending) within the burner is the ingenious device which governs air volume.



Complete electrode assembly and tube to nozzle is removable through the back of burner. Note the square electrode porcelains. The electrodes are held rigidly in place to maintain hottest spark for the atomized oil at the nozzle.



Light in weight. Strong, precision-made, deep-drawn, ductile steel stamping. Assures close alignment between shafts of motor and fuel unit for quiet, trouble-free performance. Years ahead in design, construction and durability.

TORIDHEET DIVISION
CLEVELAND STEEL PRODUCTS CORP. • CLEVELAND 2, OHIO

*Oil Burners . Air Conditioning Units . Oil-Burner Boilers
Coal and Gas Furnaces . Oil Water Heaters*

MESSAGE TO JOBBERS FROM CLAYTON & LAMBERT MFG. CO. ABOUT LAMNECK PRODUCTS

Recently we announced to the trade
that we had arranged to take over the line of products...

Furnace Pipe - Furnace Pipe Fittings
Air Conditioning Ducts - Air Conditioning Fittings
. . . formerly manufactured and distributed by Lamneck
Products, Inc., of Middletown, Ohio.

We shall continue to distribute
these products through established jobbers, maintaining
the high standard of quality for which they were favorably
known throughout the nation.

To further strengthen this line,
however, we will add new and needed products, each to be
quality throughout...each a profit-maker and good-will
builder for dealers and jobbers who are looking forward
to greatly expanded Post-war volume.

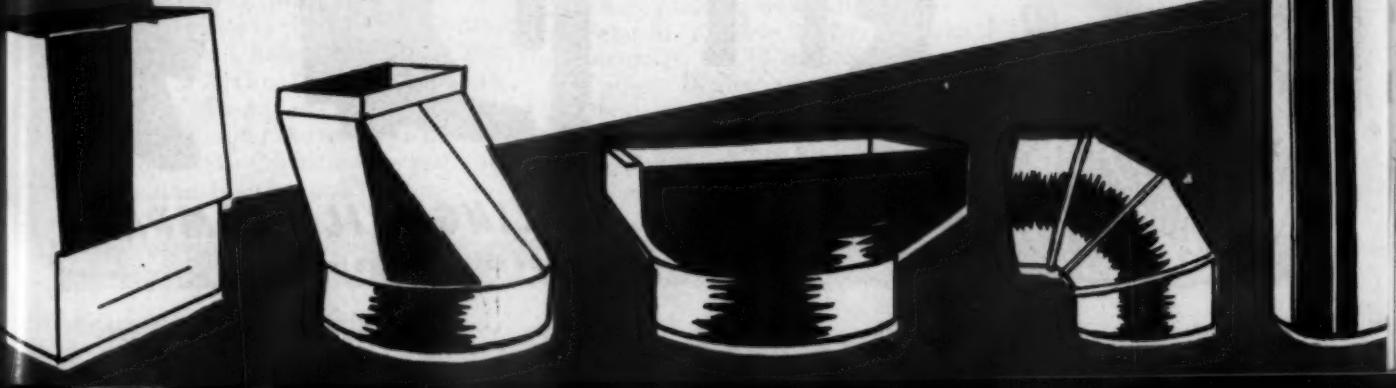
Address all inquiries to

CLAYTON & LAMBERT MFG. CO.

Middletown Division



Middletown, Ohio



include "Him" in your Post-War Plans

You've got some ideas about what you want to do when the last shot has been fired. Among other things, you probably have in mind organizing your business to better serve your customers and make more money.

Here is where the friendly, helpful Armco Distributor comes into your picture. In galvanized PAINTGRIP sheets, ARMCO Ingot Iron and Stainless Steels, he has the sheet metals you need for almost every kind of work.

But that's only the half of it. He will be ready to provide you with a complete range of shop-and-promotional services—including a free subscription to *Armco Shop News*; shop and job signs; pattern books; a cost accounting system; direct mail helps of all kinds; and much else.

No other distributor can give you the complete all-round service that the Armco Distributor can. If you don't know him, we'll be glad to put you in touch with him. Include the Armco Distributor in your post-war plans—to make the most of your business-getting opportunities. The American Rolling Mill Company, 1471 Curtis Street, Middletown, Ohio.

Export: The Armco International Corporation



THE AMERICAN ROLLING MILL COMPANY
Special-Purpose Sheet Steels

CHRYSLER AIRTEMP



Merchandising — That Helps Dealers Sell

Chrysler Airtemp backs up the dealer with a complete merchandising program to help him sell. Continuous advertising campaigns keep the Airtemp name before the public. Display and promotional material, cooperative newspaper and publicity programs; a special service plan; a finance plan; customer relations ideas; factory sales and installation training courses help to complete the package. Sell the "Packaged" line backed by a "Packaged" Merchandising Program! Chrysler Airtemp pioneered "Packaged" Air Conditioners and the Combination Heating and Cooling Sys-

tem for the home. Chrysler Airtemp builds a complete line of smartly styled, soundly engineered heating equipment — warm air, hot water and steam, using all types of fuel, and priced to meet the needs of even modest budgets.

The Chrysler Airtemp Triple Line . . . Heating, Cooling, and Commercial Refrigeration . . . offers dealers an unusual opportunity for 12 months' profitable operation. Dealer agreements will be available for any single Chrysler Airtemp Line . . . any two lines . . . or for all three lines. • Airtemp Division, Chrysler Corporation, Dayton 1, Ohio.



THE TRIPLE LINE

THE 4 FUNDAMENTALS
of CHRYSLER AIRTEMP
DEALER OPERATIONS

1. Engineered Installation
2. Proper Display
3. Outside Selling
4. Customer Service



Buy More War Bonds! You'll enjoy "The Music of Marion Gould," Thursdays, CBS, 9 p.m., E.W.T.

HEATING • COOLING • REFRIGERATION



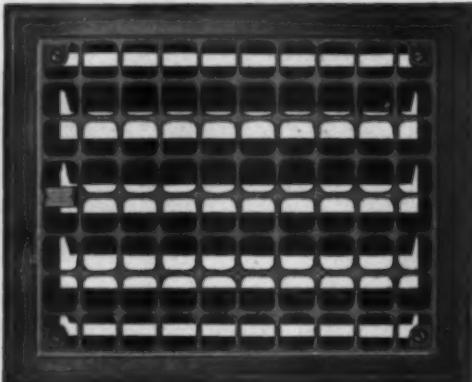
60 MM
Mortar Shell

Shells MUST Have Precedence!

If you haven't been able to get all the H & C Registers you need, the reason is that our first obligation is to the boys who are fighting this war. Mortar shells must come first and the quantity required from us now considerably exceeds the quantity previous to V-E Day. Rest assured that we are doing all in our power to take care of our established accounts, and if delays are experienced, we sincerely trust that you will bear with us in these unusual circumstances which are temporarily beyond our control.

To make as many floor registers available as possible we have reinstated No. 200 Series for the duration, since we can make approximately six times the quantity of this register in any given period than we can of the No. 210. No. 200 is a quality register in every detail and was for many years the most popular floor register on the market. Please order strictly in conformity with Bulletin S-121, the reissue of former Bulletin S-95, showing our present and post-war lines.

H & C NO. 200 STEEL FLOOR REGISTER



HART & COOLEY MANUFACTURING CO.

*World's Largest Manufacturers of
Registers, Grilles, Furnace Accessories*

HOLLAND • MICHIGAN

Association Activities . . .

(Continued from page 96)

National

The Sheet Metal Contractors National Association, Inc., calls attention of members to F. E. P. C. Bill. This refers to H. R. 2232, sponsored by Congressman Mary L. Norton (D., N. J.).

This bill, if passed, would establish a Commission (with sub-agencies throughout the country), with power to impose penalties of fines and imprisonment upon employers, declared guilty by the commission (or its sub-agency), of discrimination in hiring employees because of race, religion, color or national origin.

Obviously, before such a commission, the employer would be deemed guilty until he proved himself innocent. The commission would have the power to subpoena records, and to make sweeping investigations of any concern, in hearings open to the public. Snooping would run riot.

For the sake of your own independence to hire whomsoever you please, and to run your own business, write to your two U. S. Senators and your district Congressman to oppose the passage of this bill. Your doing so will also be the backing we must have if we appear before the Congressional committee hearing on this bill.

Your protest and those of your friends, sent in now, will help to kill this vicious piece of legislation.

Clarence J. Meyer, National Secretary.

Homer Selch, secretary of the Sheet Metal and Warm Air Heating Contractors Association of Indiana, is a delegate of the Indiana Construction Industry Policy Committee—an organization of eighteen groups—with headquarters in Indianapolis. The Indiana Construction Industry is a clearing house for industry cooperation, especially in the field of legislation and public relations.

H&C DAMPER REGULATOR SETS



LIST PRICE.....No. 40 1/4.....\$0.30



BRACKET TYPE. Nut holds damper securely, preventing vibration. Handle which indicates position of damper, may be left in place permanently or removed after adjustment (to prevent tampering). Snap End Bearing on $\frac{1}{4}$ " size, Solid Bearing on $\frac{3}{8}$ " size. Each set individually packaged.

LIST PRICES.....No. 50 1/4.....\$0.40
No. 50%\$0.40



DISK TYPE. Like all H&C sets, this set is equally adaptable to splitter or regular dampers. Snap End Bearing on $\frac{1}{4}$ " size, Solid Bearing on $\frac{3}{8}$ " size. All parts are rust proofed. Complete set in carton.

LIST PRICES.....No. 80 1/4.....\$0.40
No. 80%\$0.40

*See your jobber or write
for literature and sample.*

HART & COOLEY MANUFACTURING CO.
HOLLAND, MICH. • PHILADELPHIA OFFICE: 1600 ARCH ST.



FURNACES NOW AVAILABLE

FOR BIG INSTALLATIONS



NEW PROFIT OPPORTUNITIES OPEN TO
DEALERS HANDLING THE **J&C** LINE

Dealers alert to changing trends in heating equipment are looking to J & C Furnaces for greater profit opportunities, and with good reason.

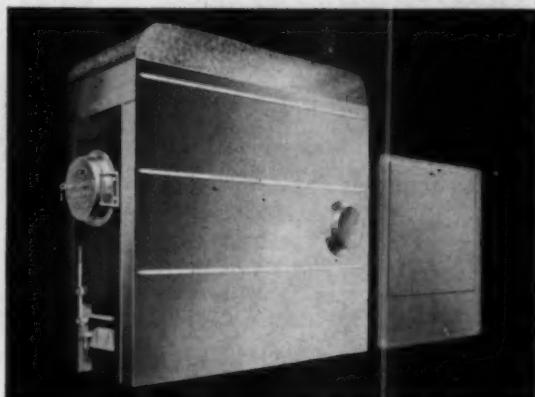
Jackson & Church Co. engineers lead the way in developing design features that insure the two big selling points dealers rely on—more effective heating and lower cost heating. These modern heating improvements are refined to the greatest degree in J & C Heaters.

Series 32-48 J & C Power Heaters (illustrated), now available to dealers, render the performance of a custom-built heating plant at the price and ease of installation of a ready-made furnace. They do the same job as larger, more expensive heating plants—and they do it at lower cost.

J & C furnaces are available in a complete size range from small home installations to the large commercial size described above. All models are built for oil, gas or coal firing. Comfortable forced-

air conditioning is assured through a self-contained unit which, by means of a powerful blower system, floods the building with warm, humidified air—and changes it as often as six times an hour. And all J & C Furnaces give long, dependable service with a minimum of repair.

It will pay you to write for complete particulars.



JACKSON & CHURCH COMPANY • ESTABLISHED 1881

SAGINAW, MICHIGAN



ANNOUNCING STANDARD SIZES OF GRAVITY LINES

Approved by Code Committee of National Warm Air Heating and Air Conditioning Association.

No. 40 SERIES GRAVITY BASEBOARD REGISTERS

& Baseboard Intakes
No. 400 Floor Registers
No. 405 Trussteel Faces



Other Catalogued Sizes will be Available from Stock. Simplify and Economize with U. S. Products the INDUSTRY'S HIGH-EST Quality Lines.

U. S. BASEBOARD REGISTER

No. 43½—10x 8—2½"
No. 42½—12x 8—2½"
No. 44½—12x 9—3½"
No. 456—13x11—5½"

U. S. SIDEWALL REGISTERS

No. 240—10x8
No. 240—12x8

U. S. BASEBOARD INTAKES

No. 4014—14x10—4"
No. 4030—30x10—4"

Check your needs for Gravity Registers and Faces with our Catalog No. 41-G.

Order U. S. and get the BEST.

A-C Register Standardization will be announced later.

UNITED STATES REGISTER CO.

BATTLE CREEK, MICHIGAN

MINNEAPOLIS • KANSAS CITY • ALBANY

New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 112.

160—Di-Acro Die-Less Duplicating

O'Neil-Irwin Manufacturing Co., Minneapolis 15, has just published a new edition of their catalog, "The Di-Acro System of Die-Less Duplicating"—40 pages, containing illustrations and information concerning Di-Acro precision machines. A major improvement is the use of Torrington roller bearings in all sizes of Di-Acro benders. ♦

161—Service and Instruction Manual

General Controls Company, 801 Allen Ave., Glendale, California, offers handbook FI-101 to the utility, installation and service man, that greater satisfaction and better service may be derived from the B-60 control system.

General instructions on installation, service troubles and remedies, maintenance and repairs, removal, disassembly, inspection, adjustment and test procedure are given in this handbook covering the Pilot Generator, the B-60 gas valve and T-80 thermostats.

The Parts Catalog Section contains a list and illustrations of all parts for the B-60 Gas Control Valves. ♦

162—Pocket Manual on Rivets

Cherry Rivet Company, 231 Winston St., Los Angeles 13, offers a new pocket manual, D-45, giving at a glance a general picture of what Cherry Rivets are and can do. This 20-page booklet, illustrated in three colors, covers the several basic types, their installation methods and applications.

Self-plugging and hollow Cherry Rivets in various styles, sizes and alloys are described in detail. Of particular interest is the comparison between "blind riveting" and "pull riveting".

Typical applications in such materials as sheet metal, fabric, plywood, plastic, rubber, leather and enamels are listed, together with interesting facts about riveting thin sheet metal assemblies, fairings, sub-assembly jig work, tubes.

A section titled "A Cherry Rivet for Every Job" lists twenty types of Cherry Rivets designed for a variety of materials and uses. Application guns G-15RB pneumatic and the hand guns, G-10, G-25, G-35 and G-20 are described and illustrated, with angle adapters, flat face nippers and Cherry Rivet Kits. ♦

163—Rivnut Data Book

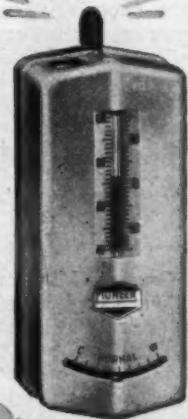
The B. F. Goodrich Company, Akron, Ohio, has just published a new 40-page Rivnut Data book, featured by 10 pages devoted to detailed information on tests. The Rivnut, which was originally developed for attaching its rubber De-Icer to airplanes, is a one-piece internally threaded and counterbored tubular rivet which can be headed or upset from one side with a simple tool.

First two pages of the book are devoted to an illustrated description of the Rivnut and its generalized application. Next comes a description of types, head styles and grip ranges. Selection of the proper Rivnut is treated in detail, instructions for the drilling of the holes are given, as well as the correct method of installation. Complete descriptions of tools are given, with all information required to make tool adjustments. Charts show how to order the Rivnut by its proper number.

Some of the potential applications are attachments for name plates, stoves and ranges, air conditioning equipment, instrument panels, auto accessory attachments, sheet metal repair, interior automobile trim, display cases, metal furniture and photographic equipment, and in railroad passenger and Pullman car construction.

ROOM THERMOSTAT

The little red light tells when the heat is on



Everything you need IN ONE PACKAGE!

AVAILABLE NOW

FOR
PROFITABLE
TEMPERATURE
CONTROL
INSTALLATION

on hand-fired
heating plants

Just *three** easy-to-install units plus all the necessary wires, chains and fittings ready to install.

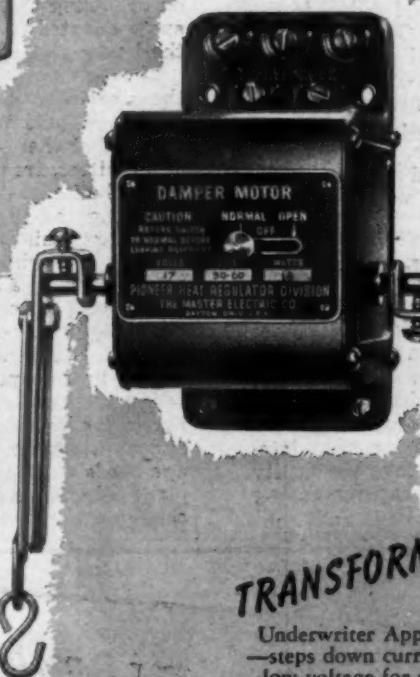
*Various types of safety limit control and time switches are available if desired.

WRITE TODAY FOR DETAILS

The **MASTER ELECTRIC** Co.
Aircraft and Electrical Controls Division
DAYTON 1, OHIO

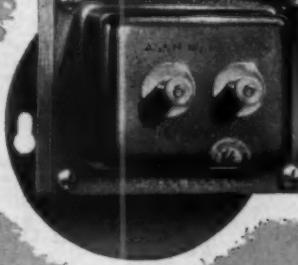
DAMPER CONTROL

Closes and opens the dampers quietly and dependably



TRANSFORMER

Underwriter Approved—steps down current to low voltage for safety. Short circuit proof



PIONEER
CONTROLS

New Literature

For your convenience in obtaining copies of New Literature use the coupon on page 112.

164—Books, Publications and Patents

Battelle Memorial Institute, Columbus 1, Ohio, offers a 72-page catalogue of the publications and patents which have resulted from fifteen years of fundamental and applied Battelle research.

Founded to advance education, science, and industry through research and through the dissemination of technological information, Battelle has published widely in the nation's technical and scientific journals. The new catalogue lists more than 800 such journal contributions, books, and patents between the years 1929-1944, inclusive.

The catalogue includes subjects in the fields of organic chemistry, electrochemistry, chemical engineering, graphic arts, welding technology, applied mechanics, mineral dressing, industrial physics, ceramics, fuels, and metallurgy.

Copies of the catalogue are available on written request on university or company letterhead.

165—Consolidated Table—Underfeed Stokers

Stoker Manufacturers Association, 307 North Michigan Avenue, Chicago 1, offers the 2nd Edition—revised May 1945—of the SMA "Consolidated Table" on load carrying capacities, minimum furnace dimensions, draft and chimneys for typical single retort underfeed stokers.

There are no changes in the basic and fundamental data. The changes are physical in order to improve the utility and reference value of the table and the accompanying data.

The table is printed in good size legible type and the headings in each column placed vertically which makes it much easier to read and to refer to the notes applying to the table on the opposite page.

On the back page of the folder the four major "Factors Determining the Selection of Stoker Equipment" has been printed together with the detailed explanation of each factor, exactly as shown in the SMA Technical Manual.

Supplies of these folders are available to all members at a special price of \$2.50 per hundred copies, or \$25.00 per thousand copies, express or parcel post included. To others, the price is 5c per copy in any quantity, postpaid.

166—Designing the Home

Small Homes Council, Mumford House, University of Illinois, Urbana, has issued an eight-page free circular—the seventh of a series for home planners and owners—on designing the home and how to select a plan, with the space adapted to the needs of the family which will live in the house.

The Circular provides a check list to aid in studying these needs, gives suggestions on the selection of a house plan, and tells what virtues and faults to note. It explains that there are three ways of choosing a plan—from an architect, from a planning service, or by buying a completed house.

Among the suggestions for home planners are: Good planning minimizes waste and reduces cost; a common fault is to begin with the exterior and force living space into this shell; a good plan provides for more than only a house with a certain number of rooms; in small homes flexibility is important—room areas of several uses; circulation, the normal path of traffic, may make a hallway of a room in a poor plan; the house should be planned to take advantage of the sun, breezes, and views at its own particular location; don't overlook the effect of door swing and of window heights on furniture placement; list storage needs to be sure of adequate storage space; changing plans with an eraser and a pencil is much cheaper than changing a house after it is built.

If you are developing new post-war fans, blowers, or other air conditioning equipment—it will pay you to investigate

TRIANGLE
BEARINGS

Shock-Absorbing Pillow Blocks

They are silent—vibrationless—self-lubricated—scientifically streamlined for compactness, simplicity, strength and minimum obstruction to air flow.

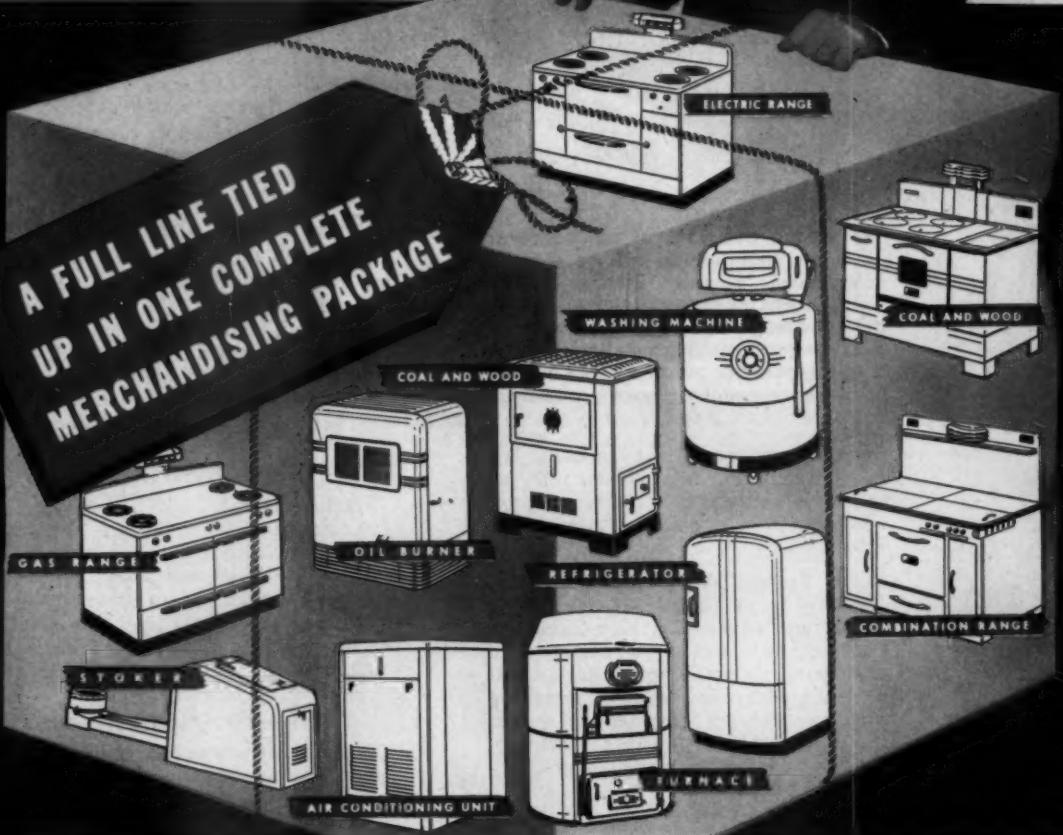
Write for samples and complete information

TRIANGLE MANUFACTURING CO.
392 DIVISION STREET OSHKOSH, WISCONSIN

New Kalamazoo Post War Franchise



A FULL LINE TIED
UP IN ONE COMPLETE
MERCHANDISING PACKAGE



Look Ahead—Get Ahead—Keep Ahead with Kalamazoo

Kalamazoo—for the first time—offers franchise dealers in certain markets an opportunity to share in Kalamazoo prosperity. For 45 years, Kalamazoo has sold only by mail and through its factory-owned stores. Now, through mass distribution and mass production in highly modernized factories, the new Kalamazoo line offers outstanding values with great volume and profit possibilities. Grow with Kalamazoo—a sound company in a sound industry! For complete information, write today to Sales Manager,

KALAMAZOO STOVE & FURNACE COMPANY
453 Rochester Avenue, Kalamazoo 6, Michigan

- A Great Name to Sell
- A Complete Line
- Exclusive Territory
- Business Counsel
- Outstanding Selling Features
- National and Local Advertising
- Sales Promotion Support
- Established Repair Business

KALAMAZOO
STOVES AND FURNACES

MURRAY LEONARD DESIGN 1941



We predict that 95% of the post-war home air conditioning will be sold by Independent Heating Dealers. The Independent Furnace Dealer alone has the knowledge and experience required to make good heating installations. His broad experience assures home owners of more dependable, more economical and safer heating installations.

Premier will continue to back the Independent Furnace Dealer, in the future as in the past. Premier equipment will be sold through Independent Furnace Dealers.

Every Premier dealer receives exclusive territory protection, effective selling and advertising helps, and the assistance of factory trained field engineers. Every Premier dealer will have the advantage of a complete line of home-comfort equipment — everything required for warm air heating, air conditioning, automatic fuel burning, and cooling.

Write today. The exclusive Premier Post-War Franchise may be open in your territory.



Premier Furnace Co.
Dowagiac, Michigan

PREMIER

Cast Iron Furnaces . . . Steel Furnaces . . .
Winter Air Conditioning . . . Oil Burners
. . . Blowers . . . Stokers . . . Cooling
Equipment . . . Humidifiers . . . Registers
. . . Ductwork . . . Automatic Controls

New Literature

For your convenience in obtaining copies of New Literature use the coupon on this page.

167—Furnace Repair Parts Catalog

The Peerless Foundry Company, Inc., 1845 Ludlow Ave., Indianapolis, is producing a new furnace repair parts catalog. The company believes that as the rebuilding of their plant progresses their manufacturing situation will be improved to such an extent that relationship with old and new customers will be greatly strengthened.

168—Service and Instruction Manual

General Controls Co., 801 Allen Ave., Glendale 1, Calif., is distributing a service and instruction manual on automatic gas heating controls, indexed. Text describes the control. Line drawings name the various parts and lines of the controls. Installation instructions are clear and brief. Service troubles and remedies are given.

169—Settlement of Terminated Contracts

War Department and Navy Department, Joint Termination Regulation Distribution Office, Sixth Floor, Federal Office Building, 90 Church Street, New York 7, have prepared an Army-Navy Contractors Guide for prime and subcontractors—an outline for contractors, suggesting methods of and advance planning for settlement of terminated fixed-price supply contracts with Army and Navy, with illustrated practical procedures.

170—Metal Working Tools and Machinery

Whitney Metal Tool Company, 110 Forbes Street, Rockford, Illinois, is distributing a 42-page, 8½ x 11 catalog entitled "Whitney-Jensen Metal Working Tools and Machinery," indexed front and back, showing their punches, shears, foot presses, bending brakes, power presses, power shears, dies and small tools with specifications and prices. A page is devoted to punching rules and computations.

171—Instrument and Controllers

The Hays Corporation, Michigan City, Indiana, has just released a new booklet, entitled "Hays Instruments and Controllers in Industry." It features schematic drawings of typical applications of instruments and controllers to the following industrial control problems: pressure reducing, pressure relief or back pressure, rate of flow, turbine-driven compressor control, and control of speed, liquid level and liquid density. The various instruments and controllers applicable to these problems are illustrated and described in detail. Bulletin 45-713 will be sent on request.

FOR YOUR CONVENIENCE

American Artisan, 6 N. Michigan Ave.
Chicago 2, Ill.

Please ask the manufacturer to send me more information about the equipment mentioned under the following reference numbers in "New Products" and "New Literature." (Circle numbers in which you are interested):

38	39	40	41	164	165
160	161	162	163	164	165
166	167	168	169	170	171

Name . . .
Company . . .
Address . . .
Are you Manufacturer Jobber Dealer

HUSSEY

COPPER

BRILLIANT TUMBLE

FOR DEPENDABLE PRODUCTS THAT LAST LONGER

Soon, Hussey Copper and Copper products will again be seen on many familiar products, and other expanded peacetime applications that play an important role in American "Better Living." Let Hussey engineers work with you now in applying to best advantage these properties of electrical and thermal conductivity, resistance to rust and corrosion, great strength and easy workability.

C. G. HUSSEY & CO.

(Division of Copper Range Co.)

Rolling Mills and General Offices: PITTSBURGH, PA.

Warehouse Stocks in NEW YORK PHILADELPHIA CLEVELAND
CINCINNATI ST. LOUIS CHICAGO



Sampsel

DAY-NIGHT THERMOSTAT with ELECTRIC CLOCK

Strong permanent magnets definitely snap the contact points into position when the clock action brings them close together. Arcing and chattering are thereby prevented. This is one of the many features of Sampsel Day-Night Thermostats and further proof of Sampsel's advanced engineering and fine construction.

Ideal for use with any type of fuel oil, gas or coal heating system. Automatically maintains different day and night temperature levels.

Complete Sampsel Control Catalog on request.

SAMPSEL TIME CONTROL, INC.
SPRING VALLEY, ILLINOIS

Sampsel

AUTOMATIC CONTROLS

With the Manufacturers

Library Needs Patent Numbers

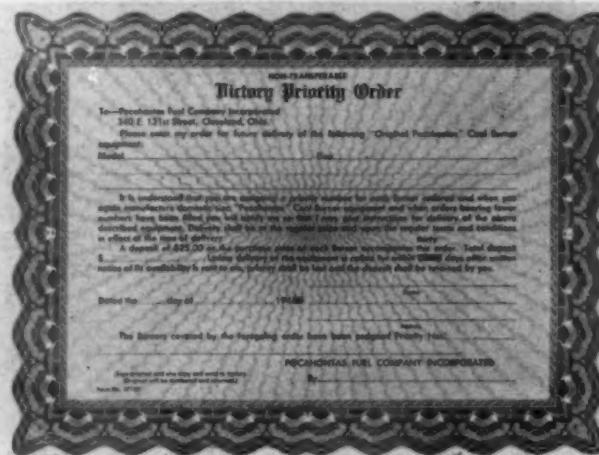
The Davis Welding Library, The Ohio State University, Columbus 10, Ohio, aims to assemble in one place all of the important literature on welding. The library is named for its donor, A. F. Davis, vice president of the Lincoln Electric Company, Cleveland.

The Library invites the assistance of the industry in extending its collection. Copies of over ten thousand patents concerning welding equipment and the patented applications of welding are now on file, but the library needs patent numbers covering machines or structures built by welding, and invites friends of the Library to send to the Librarian the patent number of any patents pertaining to welding, welded equipment, welded machine design, welded structural design or any welding applications. Visitors to the Library are welcomed.

Pocahontas Victory Priority Plan

Pocahontas Fuel Company Incorporated, Stoker Division, 340 East 131st Street, Cleveland 8, devised their own Victory Priority Plan which registers all orders for stokers in a master file, numerically as they are sent to the factory, and to be shipped in the order received.

A dealer is permitted to send in the Victory Priority Order—usually limited to six stokers—which is assigned



a priority number. As stokers are manufactured and ready for shipment, they are sent out in this same numerical order.

A similar plan is provided for the dealer in which he issues a printed priority form to his customers, and he registers them numerically, so that as he receives shipments from the factory, he in turn delivers them to his customers in the order registered with him.

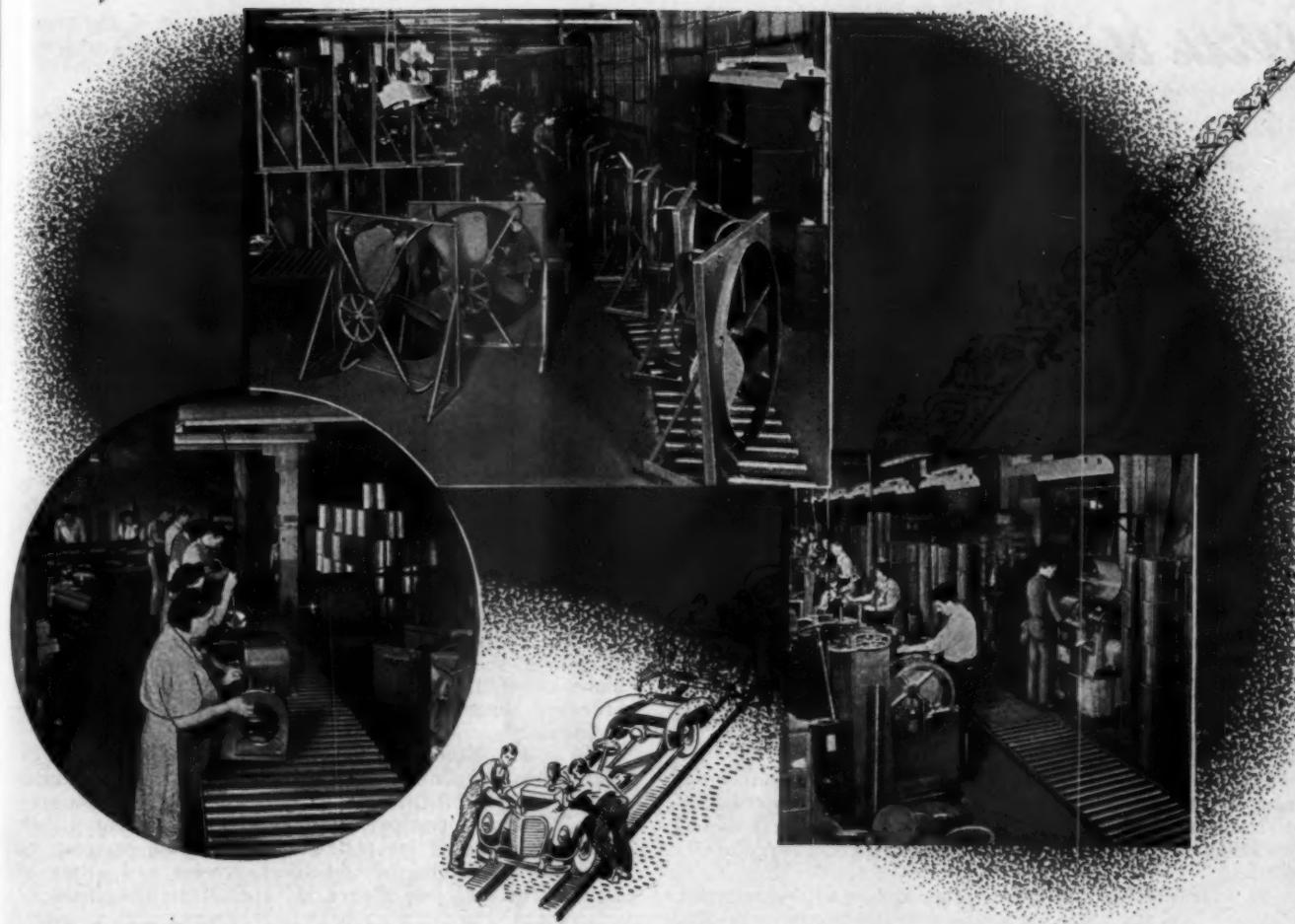
Some dealers have posted a bulletin in their offices, showing the numerical order of each Victory Priority they have sold.

Maxwell Steel Company Expands Service

Maxwell Steel Company has under way a \$100,000 expansion program including additional site, more trackage, new buildings costing \$40,000, and \$60,000 in new equipment at their plant at 400 Riverside Drive, Fort Worth 1, Texas.

The program includes a craneway 360 feet long with a 60-ft. span and a capacity of 7½ tons. Other modern machinery and equipment to be purchased includes bending, cutting and punching machines.

The company fabricates structural and reinforcing steel for building and highway construction, manufactures sheet metal products and distributes Armco materials, Anaconda copper products, as well as a complete line of tinsmiths' supplies. Maxwell is also steel erector in the area.



LAU Blowers and Fans are MASS PRODUCED

In the Lau Blower Company's modern all-ground-floor plant, Lau blowers and fans are produced in large quantity by straight-line automobile assembly methods. All blower and fan parts, except motors and belts, are produced under one roof and flow smoothly to experienced assemblers. And, as in the automotive and refrigeration industries, savings effected are passed on to you, the customer. Mass production offers many other advantages.

All parts are perfectly matched for maximum performance and are

consistently uniform. Thus it is possible for you to compete on a quality, labor, and price basis against the entire field, and particularly against parts assemblers. Your own labor used to assemble blowers and fans can be used much more profitably in the production of equipment that you normally are set up to build.

Practically all Lau products being manufactured today are going to war. A small percentage of our output is going for civilian use on priority. We can make reasonably prompt delivery on orders with proper priority. If you are now in the market or expect in the near future to be in the market for blowers or fans, send us your name and address for latest information about Lau product development, manufacturing restrictions, government regulations, and so on.



B L O W E R C O M P A N Y
D A Y T O N 7, O H I O, U. S. A.

WORLD'S LARGEST MANUFACTURER OF FURNACE BLOWERS

Engineers and fabricators of general Air Handling Equipment • Single Inlet and Double Inlet Blowers • Propeller Fans • Accessories

AMERICAN ARTISAN, July, 1945



Package Units



Blower Assemblies



Propeller Fans



Blower Wheels

With the Manufacturers

Essick Erects New Factory

A new factory building is being erected at 2010 Santa Fe avenue, Los Angeles, for the Essick Manufacturing Company, manufacturer of domestic air coolers. The new structure will cover an area of 40 x 100 feet and will cost \$6,500.

Efficiency Through Incentive

The Lincoln Electric Company, Cleveland 1, has adhered to the policy of "no increase in selling prices" announced on October 2, 1939, and believes this has been made possible by their wage incentive system. A progress report on October 2, 1941—two years later—showed that prices had been reduced by more than six per cent, and the company has been able to maintain or reduce prices throughout the period from 1939 to date despite general increases in the costs of labor, materials and distribution and government regulations.

Lincoln believes America's future depends largely upon her efficiency of production and that Lincoln's incentive system has in it the seeds of a satisfactory answer to the difficulties of production in industry.—J. F. Lincoln, President.

New Premier Distributor Set-Up

Post-war distribution of Premier industrial and commercial vacuum cleaners will be based on a newly-created distributor-dealer organization, according to John Tuteur, president of the Electric Vacuum Cleaner Company, Cleveland 10.

Because Electric Vacuum Cleaner Company's industrial

business has grown so rapidly, and because of the huge back-log demand, pre-war distribution methods are being discontinued to make way for the new distributor-dealer set-up.

Distributor appointments are being offered to organizations with long experience in the sale and distribution of industrial and commercial vacuum cleaners. The distributing group will carry out a program of specialized training of dealers' sales forces to enable dealers to secure a large share of the consumer business awaiting release of machines of this type.

Williams Oil-O-Matic and Eureka Merge

Merging of the Williams Oil-O-Matic Heating Corporation and Eureka Vacuum Cleaner Company, approved by the shareholders of both companies on May 28, has now taken place. Both divisions are well underway with far-reaching postwar plans.

Both Oil-O-Matic and Eureka will continue with entirely separate, completely independent sales and merchandising set-ups. Product trademarks, too, will be carried as before. The Williams Oil-O-Matic Heating Corporation is now known as the Williams Oil-O-Matic Division of the Eureka Vacuum Cleaner Company.

W. A. Matheson, president of the Williams Oil-O-Matic Heating Corporation now becomes a vice president and director of the Eureka Company and manager of the Williams Oil-O-Matic Division. Henry W. Burritt, Eureka president since 1939, becomes president of the merged companies.

All of the directors and officers of the Williams Oil-O-Matic Heating Corporation, except Walter W. Williams continue with Oil-O-Matic. Under terms of the merger, Mr. Williams, principal shareholder of Williams Oil-O-Matic, disposed of his entire interest in the company to Eureka. Remaining shareholders receive one share of Eureka for each two shares of Oil-O-Matic they hold.

Johnson FANS AND BLOWERS improved by continuous research



★ Johnson Health-aire Propeller Fans and Blowers of various types are now available for industrial and commercial users. And back of every one of these products is the cumulative "know-how" growing out of more than twenty-five years of constant research, experiment, improvement, perfection. New units were created and added to the expanding line to keep pace with every modern requirement. Johnson engineers have solved literally thousands of ventilating and air-handling problems—their counsel is available to you at all times to help produce "climate as you like it."

*BLOWERS (above) available from 6" to 50".

JOHNSON FAN & BLOWER CORP. • 1319 W. Lake Street, Chicago, 7, Illinois

With the Manufacturers

E. C. Alft has been designated as district manager for York-Heat Division of York-Shipley, Inc., York, Pa., throughout the Mid-Western States. Following an extensive sales management career in the major household appliance field, Mr. Alft has been identified with the oil burner industry for the past fifteen years.



E. C. Alft

C. H. Hodges, Jr., president of the Detroit Lubricator Company, announces the appointments of E. J. Doucet, general sales manager, to vice-president and general manager sales, with headquarters at Detroit; and K. B. Thordike, manager, western regional office, to vice-president, western regional office, with headquarters in Chicago.

William B. Shirley has been appointed director of heating sales for Airtemp Division, Chrysler Corporation and will make his headquarters in Dayton, according to Paul B. Zimmerman, vice president and general sales manager.

For 20 years, Shirley has been connected with the Lennox Furnace Company, Marshalltown, Iowa. Shirley has had wide experience as an installing dealer; as a manufacturer's field representative active in straightening out installation difficulties, teaching dealers, assisting them and directing their efforts; and as a salesman in charge of national selling activities, installations and dealer-education work.

In 1937, at Dallas, Texas, he introduced an innovation in warm air heating for the South's basementless houses: a forced air heating unit placed in the attic, specially designed for low height.



Wm. B. Shirley



Left:
C. F. Cushing



Right:
James N. Crawford

The appointments of C. F. Cushing as distribution manager, and of James N. Crawford as sales manager of the Gas Heating Division, Bryant Heater Company, Cleveland, are announced by Lyle C. Harvey, president.

Mr. Crawford has been associated with the Bryant Heater Company for the past 12 years.

Mr. Cushing is active in the American Society of Heating and Ventilating Engineers, Cleveland. Formerly associated with the Frigidaire Corporation, Mr. Cushing has been with the Bryant Heater Company since 1935.

Willets-O'Neil Company, 5000 Wisconsin Ave., Washington 16, D. C., has been appointed exclusive distributors for the Eastern States, by Electric Vacuum Cleaner Co., Cleveland 10, Ohio. This distributing organization is headed by H. B. O'Neil, for the past 18 years' manager of Electric Vacuum Cleaner Company's Industrial Division, and C. A. Willets, who spent many years in this field prior to his recent service with the War Production Board in Washington.

FUEL SHORTAGES AHEAD!

SELL

Fuel-Saving

G-A THERMOSTATS

Now!

Approved by
the Anthracite Industries
Laboratory



No. 130 Furnace Sentry Unit

Gleason-Avery Thermostats can help your customers stretch their fuel supply, save on heating bills. Check these important Gleason-Avery advantages:

- ✓ Accurate, controlled heat on hand-fired heating systems.
- ✓ Easy reading and setting . . . through fingertip adjustments and synchronized settings.
- ✓ Quick, simple installation. G-A Damper Motor may be mounted in any position.
- ✓ Positive safety. G-A Damper Motor with exclusive Straight Line Control and Spring Return prevents overheating, eliminates troublesome sprockets and rotating arms.
- ✓ Lustrous, easy-to-clean Mirror-Lite finish blends with any decorative scheme.

Expected fuel shortages next winter can mean increased thermostat sales now. Customers appreciate G-A accuracy . . . dependability . . . economy (a G-A Thermostat usually pays for itself in fuel saving the first year). Direct orders accepted when accompanied by wholesaler's name.

No. 130 Furnace Sentry Unit Package for hand fired domestic heating plants, complete with thermostat, damper motor, and all accessories, ready to install.

LIST PRICE.. \$19.50

Gleason-Avery, INC.
AUBURN, N.Y.
A RELIABLE NAME IN TEMPERATURE CONTROLS

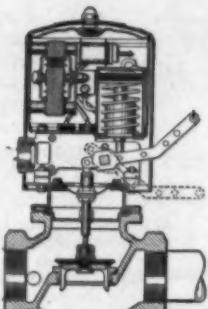
The Motor Valve with 3 "extras"



GENERAL CONTROLS HYDRAMOTOR GAS VALVE

1. Extra years of life.
2. Extra quick response.
3. Extra operating power.

The most powerful motor valve of its size ever designed. Simplicity and minimum friction insure years of extra life. Opens, 8 to 10 seconds. Closes, 2 to 3 seconds. Sizes, 3/4" to 2 1/2" I.P.S. Low or line voltage, all frequencies. Sealed in oil for life. Has ample damper power for louvers or secondary air doors. Motor driven hydraulic pump compounds high operating force. No gears to wear or lock. Highly recommended for mixed, manufactured or natural gases. Ask for further details.



Type G-1-5

GENERAL
801 ALLEN AVENUE



CONTROLS
GLENDALE 1, CALIF.

FACTORY BRANCHES: PHILADELPHIA • ATLANTA • BOSTON • CHICAGO • DALLAS
KANSAS CITY • NEW YORK • DENVER • DETROIT • CLEVELAND • PITTSBURGH
HOUSTON • SEATTLE • SAN FRANCISCO • DISTRIBUTORS IN PRINCIPAL CITIES

Obituary

Perl S. Miller, president of Lamneck Products, Inc., Middletown, Ohio, suffered a heart attack and died on July 3. Mr. Miller was a former director of the National Warm Air Heating and Air Conditioning Association. He was a member of the Columbus Country Club, Columbus Club, University Club, and Delta Tau Delta Fraternity.

Surviving are his wife, Mrs. Helen Miller; a son, William Miller, stationed in England; and a daughter, Mrs. Richard Adney.

Roland R. Ware, president and general manager of Clarge Fan Company, Kalamazoo, Michigan, died at his home on June 21. He had been critically ill for the past two months. Mr. Ware was 61 years old, and had been actively identified with Clarge Fan Company, manufacturers of air handling and conditioning equipment, for over forty years.

News Summary Of the Month

(Continued from page 68)

New Order PR-28

A NEW regulation, Priorities Regulation No. 28, specifies the general policies WPB will follow in granting priorities assistance for the third and fourth quarters of 1945 for limited priorities assistance for civilian products. It also lists a number of special instances in which individual aid may be granted certain manufacturers.

During the two-front war, WPB gave "general" priorities assistance for production of certain non-military products at the minimum level required for essential civilian use. This included an allotment of controlled materials (steel, copper and aluminum) and a preference rating of AA-3 or higher for substantially all other production materials.

Program levels established for the third quarter of 1945 and any that may be established for the fourth quarter will generally be no higher than previous levels established for the two-front war, the order states.

"General" priorities assistance will not be granted for manufacture of civilian products that, prior to May 1, 1945, were completely forbidden by limitation (L) or materials conservation (M) orders except for limited numbers of refrigerators, washing machines and commercial aircraft.

When "general" priorities assistance has already been granted for certain items for the third quarter, no further "general" assistance will ordinarily be given to individual manufacturer beyond the third-quarter level for additional or new production except under the following exceptions:

(I) A particular L or M order may provide for increased production of the product controlled by the order during the third or fourth quarter. In such case the order will describe who is eligible to apply, the time for filing and the applicable form.

(II) Where manufacturers of a particular product are being given "general" priorities assistance, WPB, within the limits of available material, will give equitable treatment to newcomers and former manufacturers of the product as well as to any manufacturer of the item, with "general" priorities assistance, who has



Weirzin

ELECTROLYTIC ZINC COATED SHEETS AND STRIP

The paintability of Weirzin is a *double feature*.

First, the superior surface of Weirzin serves as a primer coat and provides a better "tooth" for paint, enamel, varnish, lacquer or lithograph inks by either spray, dip or roller application.

Second, the exceptional rust resistance of Weirzin makes it immune to high temperature and humidity

and positively prevents under-film corrosion.

Paintability is just one of the many substantial advantages you enjoy when you use Weirzin. It's your answer to a better product at a lower net cost.

Write for a test sample and a copy of our new technical bulletin *and prove it to yourself*.



WEIRTON



STEEL CO.

WEIRTON, W. VA. Sales Offices in Principal Cities

Division of NATIONAL STEEL CORPORATION Executive Offices, Pittsburgh, Pa.





NO WONDER WINKLER DISTRIBUTORS FIND IT EASY TO TURN PROSPECTS INTO BUYERS

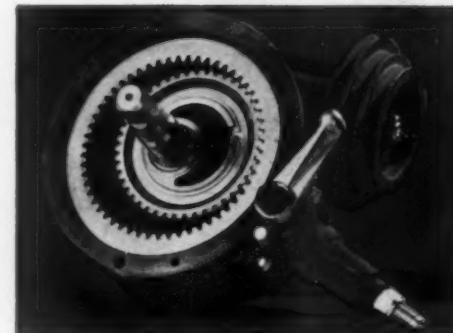
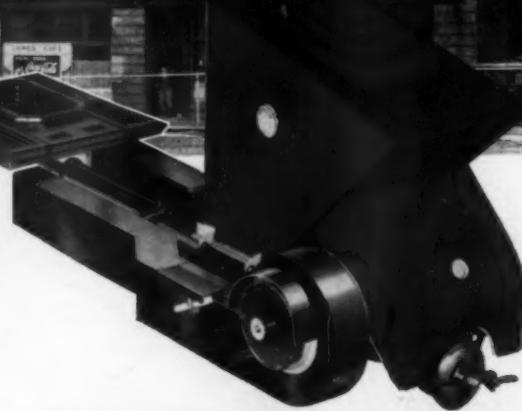
Very literally, Winkler users do an actual selling job for Winkler Distributors! What better order-closing facts could you ask than those presented in the following letter—

"The city, in enforcing a smoke ordinance, made it necessary for us to find some method of eliminating this nuisance from our apartment building. We investigated the use of stokers and after looking at several makes in operation, we could see that the Winkler Stoker was really doing the job at the same time saving Winkler users a lot of money by reducing coal consumption.

"We purchased a Winkler Stoker from your distributor and he installed it in our boiler. Since this installation, we have had no smoke and the heat is more even than we have ever had in our apartment building. At the same time, we have reduced our coal consumption from 321 to 241 tons, a saving of 80 tons.

"We have half as much ash and there is no dust from it. Our firemen have 6½ hours each day to help in the maintenance of the building. Also the Winkler Stoker is helping us with our share in National Defense by relieving the railroads from hauling as much coal as was previously necessary."

Winkler Distributors are always completely armed with the essentials of profitable merchandising . . . a superior product with a sensational record of performance—backed by thorough instruction in tested, proved selling methods. These are the reasons Winkler is known as "a good company to do business with" . . . the reasons the Winkler Franchise is a passport to solid business success.



FULLY AUTOMATIC TRANSMISSION—
NO SHEAR PIN!

The Winkler "Inter-plan" Transmission is one of many features which enable Winkler Stokers to give service without needing it. Its extra power design overcomes ordinary operating hazards. Its Automatic Safety Release protects against damage caused by a blocked feed screw. That's why the Winkler Fully Automatic Transmission is guaranteed for three years.



WINKLER

fully automatic STOKERS

U. S. MACHINE CORPORATION • Dept. E-12 • LEBANON, IND.

been producing it below his normal minimum rate because of military orders for other products and the military orders have been canceled or reduced.

(III) Increased assistance may be granted if a manufacturer needs it in order to meet military requirements for his product that he did not contemplate at the time he filed application for third-quarter assistance.

Fueloil Will Not Be Plentiful

A recent release by the Petroleum Administration for War says:

"An alarming increase in the number of applications for permission to convert from coal to oil for home heating indicates a widespread but erroneous impression that fuel oil will be more plentiful as a result of the defeat of Germany.

"PAW has announced repeatedly that more oil of the type used for home heating purposes will be required to carry on the war in the Pacific than was used during the time we were fighting on a two-front basis, and therefore, there is no prospect of increasing the civilian allotment of this type of fuel before Japan is defeated.

"Despite this fact, during the last few months applications for reconversion from coal to oil in the populous East Coast and midwestern states have increased approximately 36 per cent over the number received in the corresponding period in 1944. The majority of these applications must of necessity be rejected.

"Present users of coal heating units, even though there is a serious coal shortage and coal users in the area from which most of the conversion applications emanate have been notified they will have to get along on less coal next winter than they have been using. The best we can hope for is to meet a home heating oil demand as large as that of last season, when oil quotas averaged about 75 per cent of a normal supply.

"Even though new oil burners may be placed on the market, the situation would not change, since the fuel supply cannot be increased by making more burners. Typical examples of reasons given by applicants to whom PAW must refuse to issue conversion permits include: Coal burner worn out, in need of major repairs or unsatisfactory for one reason or another; manpower not available to handle coal furnace; desire to maintain more uniform temperature; difficult to maintain coal fire; and dealer refuses to deliver coal to convenient location on the premises. Some applicants state that their dealers have informed them that oil is more plentiful than coal. Other applicants say that oil is cleaner or less expensive, or that they wish to convert as part of general property reconstruction or improvement programs. Requests of this nature for the use of fuel oil must be rejected by PAW in view of the limited civilian supply."

Status of CMP (June)

THE important changes and current status of CMP of June are as follows:

I. Unrated Orders for Controlled Materials

Manufacturers can now place orders for controlled materials, except stainless steel, in any amount, to be delivered after June 30, 1945, without using an allotment or allotment symbol. Suppliers can fill these

ELATERITE PLASTIC PRODUCTS CO.

announces the addition of

MAROON COLOR

to the line of Elaterite Roofing Compounds

Maroon is now available in Elaterite's line of roofing compounds—No. 122-M, brush consistency; and No. 124-M, troweling mastic. Guaranteed fast color and with all of the fine protection properties of black Elaterite. Applied in same way as Elaterite Industrial Black, No. 122, with the same quick drying time and thorough coverage.

Write today for sample and for descriptive matter and instructions.

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Now Available--

A Reprint of the Valuable Treatise

"CORROSION IN STEAM HEATING SYSTEMS"

PUBLISHED originally in serial form in HEATING, PIPING AND AIR CONDITIONING, this important treatise by Leo F. Collins and E. L. Henderson presents the results of fifteen years of intensive research into every phase of the corrosion subject.

The causes of corrosion in steam heating systems, where corrosion occurs in any system, and the best means of combating it are set forth in this paper in clear detail. Here is a treasure of new and vital corrosion data that will enable the heating and piping engineer to deal promptly and intelligently with corrosion problems.

Only a limited number of copies of this reprint are available. The price is 75c per copy. Send your order, with remittance, to the address below.

KEENEY PUBLISHING COMPANY
6 North Michigan Ave. Chicago, Ill.



Fireline is highest-quality industrial refractory material adapted to repairing cracked or burned-out firepots.

You simply pound Fireline in place with a hammer and smooth off with a trowel—the job is completed on the first trip. No more wondering what size or kind of casting you'll need, no more losses through changed models and bootleg misfits, no need to carry all kinds and sizes of firepot castings.

Fireline forms a gas-tight lining entirely around the firepot—seals all cracks and holes, prevents escape of gas, odors, and soot into the building. It is also used for replacing fire tile in steel furnaces, for setting stokers, and for oil burner combustion chambers. Withstands 3000 deg. F.

Fireline is available immediately from jobber stocks. Write for bulletins, prices, and name of nearest jobber.

What Fireline Does

- Salvages burned-out firepots
- Protects good castings
- Saves fuel for owner
- Saves metal for war



Fireline is installed through the furnace door in a jiffy

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FIRELINE
STOVE & FURNACE LINING

orders after June 30, 1945, so long as they also fill all other orders they are required to fill by WPB regulations. (Amendment 1 to CMP Regulation 1, dated May 10, 1945, and Direction 2 to M-21, dated May 12, 1945).

2. Idle and Excess Materials

Manufacturers can now buy idle and excess controlled materials without any authorization from WPB. Also many rated items of idle and excess materials without authorization. (See List A of Priorities Regulation 13 as amended May 10, 1945). You can also use your own idle and excess controlled materials for any purpose. Paragraph (u) (3) of CMP Regulation 1, amended May 10, 1945).

3. Allotments

Manufacturers have received their allotment of controlled materials for the third quarter of 1945. Generally, the initial third quarter allotment to all manufacturers will be enough to provide minimum essential production for the third quarter. Therefore, WPB will not give additional allotments unless needed to fill additional military orders not expected or to adjust errors in applications or authorizations, or unless an applicable order states that a change has been made in production quotas. Some advance quarter allotments are also being made. These probably will be changed later as accurate knowledge of supply and demand permits the determination of CMP policy for future quarters.

4. Authorized Production Schedules Under CMP

When manufacturers get third quarter CMP allotments they may find that a specific production schedule in dollars or units for the third quarter has been entered in Section I of the authorization form even though they were not previously assigned one. If such a production schedule has been assigned the allotments and preference ratings may not be used to get production materials for production in excess of the amount specifically authorized. (CMP Regulation 1, as amended May 10, 1945, and CMP Régulation 3, as amended May 14, 1945).

5. Production in Excess of a Specific Authorized Production Schedule

Unless there is a WPB order or regulation still in effect that restricts production of a product, manufacturers can make it in any quantity in excess of a specific authorized production schedule, if they get all of the materials needed for the excess production without using preference ratings or allotments. (Paragraph (o) (4) of CMP Regulation 1, as amended May 10, 1945.)

6. Statement of Manpower Requirements—WPB-3820

Manufacturers are no longer required to file a Form WPB-3820 with a CMP-4B application if their plant is located in Group 3, Group 4, or unclassified labor areas, or if the total number of production workers in the plant (regardless of labor area) will not exceed 100 if the application is approved. (This is true regardless of instructions on Form CMP-4B to the contrary.)

7. Inventory Limitations

If manufacturers expect to start or resume civilian production at any time, they can receive now the minimum amount of controlled materials they expect to need during the first 30 days of such production, provided no allotment symbol or other priorities assistance is used to get this material. (Paragraph (c)

**LET'S TRY
THARCO FURNACE CEMENT
AND SEE FOR OURSELVES!**



The wisest decision you will ever make on furnace cement will be when you decide to try Tharco. If you have been looking for a furnace cement that is made right, works easily, and stands up under the toughest conditions, Tharco is your answer!

Through 35 years Tharco Asbestos Furnace Cement has become the industry's standard. The Tharco formula is an exclusive Armstrong property. No other furnace cement can be made like Tharco — and no other furnace cement will give you the same high degree of continuous satisfaction.

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**Safely Uniform
Warmth and Comfort**



● **For Homes where the Space Heater is Equipped with  Thermostatic Temperature Control . . .**

WIN the gratitude of your oil-burning Space Heater customers by helping them to stretch their fuel allotment — prevent fuel waste — and still enjoy uniformly warm homes in early spring. The A-P Thermostatic Temperature Control for Oil-Burning Space Heaters using A-P Model 240 DR or UR Manual Controls is the equipment that will insure this comfort and fuel-saving economy.

THIS  CONSTANT LEVEL OIL CONTROL



is standard equipment on most good oil-burning heaters now . . .



Just add the A-P ELECTRIC AUTO HEAT CONVERSION TOP to the A-P Control now on your heater.



Then install this A-P Thermostat on the wall, and you will have COMPLETELY AUTOMATIC HEAT CONTROL—always uniform and dependable.

AUTOMATIC PRODUCTS COMPANY

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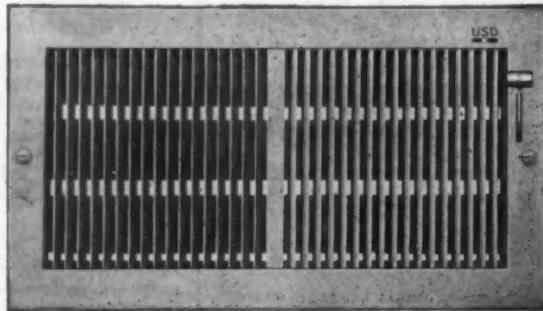
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Oil Controls**

AIRO-FLEX Adjustable Air Directional REGISTERS

Here is a simple, sturdy, economical air conditioning register with complete air control.

Auer Airo-Flex Registers provide effective 4-way directional flow. Multi-louvre back blades control up-and-down flow, and indicator on face shows position of blades. Vertical grille bars are easily adjustable for straight or sideway deflection with turning tool. The Airo-Flex design has all adjustable features of many higher priced registers. Furnished for wall or baseboard use with matching intake.

Many other types of Auer registers for both air conditioning and gravity systems shown in Auer Register Book, sent on request. For flat stamped metal grilles, ask for catalog "G."



No. 4432

THE AUER REGISTER COMPANY
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AUER REGISTERS & GRILLES

For Air Conditioning and Gravity

(6) of CMP Regulation 2, as amended May 10, 1945.) A similar provision in paragraph 944.14 of Priorities Regulation 1 (as amended May 9, 1945) permits the receipt of materials other than controlled materials.

8. General

It is WPB's policy that as much production as possible should be carried on without priorities assistance. Manufacturers can assist in this policy and help the WPB in removing its controls by promptly canceling ratings and allotments and returning unneeded allotments, as is required by Priorities Regulation 1 and CMP Regulation 1. In this way WPB can determine more quickly how much material will be freed for civilian production.

Sheet Orders Booked

STEEL producers' order books for hot rolled pickled (acid dipped) and cold rolled sheets are filled up through the third quarter of 1945 with validated Controlled Materials Plan orders, the Steel Sheet and Strip Industry Advisory Committee members reported at the June meeting with the WPB.

However, this is not the true picture of the probable availability of sheet steel during the third quarter inasmuch as military cutbacks have not been reflected at the mill level. It is expected that the June situation will change substantially in the next three or four weeks, they said.

A military representative at the meeting reported that the one-front war military requirements involving gauge sheet and strip were only slightly less than the two-front war requirements.

Industry members reported a continuation of their efforts to increase production, but said that the necessary manpower had not yet been obtained.

4½ Billion for Plants

AMERICAN business is planning to spend a record breaking 4½ billion dollars for plants, equipment and alterations during the fiscal year starting July 1, the Department of Commerce estimates. Nearly 7,000 companies, including all of the 192 largest, outlined their plans in the study.

The department's "survey of current business" said such a volume of private capital expenditures would be nearly three times the pre-war average of 1937 to mid-1940 and far above the previous 12 month record of 2½ billion in the calendar year 1929.

The expected total, however, would be smaller than combined public and private outlays during the peak war years.

In some industries the planned outlays are so large as to raise doubts as to whether the supplying industries can produce the desired equipment within the next year.

The survey covered "plans—not commitments," but replies in the survey suggested the 4½ billion estimate was not inflated by including "nebulous plans." Rather they reflected the considered judgment of an adequate cross-section of American industry. Nearly 30 per cent of the planned expenditures are for new plants.

The largest gains over the pre-war figures were in the paper and printing group and the textile, apparel and leather group.

Save Fuel — Save Money — Heat Your Plant Efficiently

Airtherm Direct-Fired Unit Heaters operate only when you need heat. There is no waste of fuel during those hours when heat is not needed. There are no pipes to freeze up if unit is turned off overnight.

Original installation is economical, too, as there is no costly duct work to be installed and installation can be made in just a few hours.

Heat from the Airtherm can be directed to any part of your plant, eliminating "dead spots" and enabling all employees to work in comfort.

There is a size and capacity to efficiently and economically heat your plant. Send for bulletin giving complete information today.

with **AIRTHERM**
Direct-Fired
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**SAVE TIME —
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WITH Follansbee
SEAMLESS TERNE ROLL ROOFING**

Furnished in 50 Foot Rolls

—without seams

Follansbee Seamless Terne Roll Roofing eliminates cross-seaming, saves lots of time. It's easy to cut to lengths required—right on the job. No camber, edges are uniformly straight, no trimming required.

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Sales Offices—New York, Philadelphia, Rochester, Cleveland, Detroit, Milwaukee.
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ALLOY BLOOMS & BILLETS, SHEETS & STRIP, CLAD METALS
COLD ROLLED CARBON SHEETS & STRIP, POLISHED BLUE SHEET,
ELECTRICAL SHEETS & STRIP, SEAMLESS TERNE ROLL ROOFING



Small Business Helps

AIDS to small businesses reconverting to civilian production are designed to assure a fair deal to small businesses as the country adjusts to the needs of a one-front war and resumes large-scale production.

The steps WPB has taken to assist small business are as follows:

1. Issuance of Priorities Regulation 27 to give blanket priorities assistance until December 31 to smaller manufacturers (those producing less than \$50,000 per quarter), which will give them preference in obtaining production materials over larger plants reconverting to general civilian production.

2. Small-order exemptions in allocation controls, which allow small businesses to place orders for many scarce materials below certain maximum quantities without applying to WPB for authorization.

3. Exemption of small plants from certain restrictions in the authorization of increased production. The most important of these is the exemption of plants employing 100 or fewer persons from the requirement of a manpower check in tight labor areas prior to authorization of expanded civilian production.

4. Limitation of manufacturers' stocks to a practicable minimum working inventory to prevent hoarding and encourage a fair distribution of materials in short supply.

5. Retention of two limitation orders controlling inventories of large wholesalers and retailers which do not apply to smaller distributors.

6. Provision for manufacturers producing over \$50,000 per quarter to obtain priorities assistance on bottleneck items.

7. Maintenance of a careful watch over compliance with WPB orders, thus preventing a dislocation of supply for the honest majority of manufacturers by an unfair few. In addition, spot checks on big users of metal are now being started and will be intensified after July 1 (the date on which steel will be made available without CMP tickets).

8. An investigation, already started, of concerns involved in large contract cancellations or cutbacks to see that orders for materials ordered on such contracts are properly and promptly canceled.

9. Maintenance of ceilings over the total volume of activities in nine major production industries and in construction, which will prevent these industries from draining all the supplies in the free market at the expense of other production.

Fractional Motor Outlook

PRODUCTION of fractional horsepower motors may increase to a total of 800,000 units per month by the fourth quarter of 1945, WPB reports.

For some time to come there will be a large continuing military demand for small motors, with the likelihood that for at least three to five years there may be a larger civilian demand for small alternating-current motors than the industry can probably meet.

Order L-341 is being retained, and will require continuous inventory reporting by those who use more than 450 such motors per quarter. Order L-123, which required priority rating to place orders for fractional horsepower motors, has been revoked.

P. S.

PLANNED SIMPLICITY . . . characteristic of all former cooling units by

Jader . . . Our watch word in design for post war units . . . simplicity

in design, installation and the all important problem of maintenance places the

Jader dealer in position to secure the profits he planned to make

originally. Potential sales of summer air conditioning equipment are unlimited. . . .

Why not check with Jader on the possibilities in your territory?



HASTINGS, NEBRASKA, U. S. A.

MANUFACTURERS OF AIR CONDITIONING EQUIPMENT

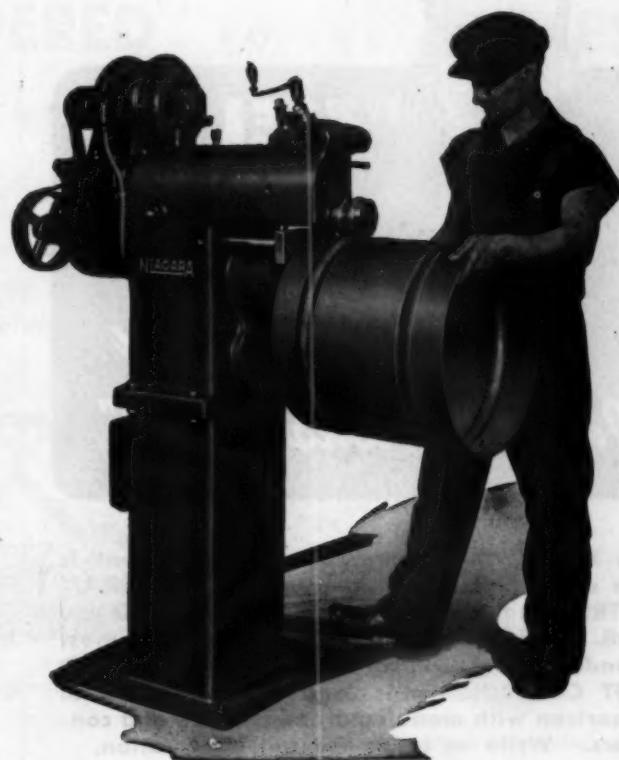
This motor driven combination machine with interchangeable rolls combines power operation, ability to handle heavy gage work, and easy operation.

Foot control of clutch and upper roll allows the use of both hands for holding and guiding the work.

Interchangeable rolls make one machine capable of burring, turning, wiring, beading, crimping, flanging, slitting and circle cutting. Beading and crimping can be done in one operation.

Gears and shafts are enclosed. Gear box contains intermediate gears and clutch, all running in oil. Clutch gives instant hand and foot control and can be locked for continuous operation.

Write for Bulletin 75A. NIAGARA MACHINE & TOOL WORKS, Buffalo, N. Y. District Offices: Detroit, Cleveland, New York.



NOW LINKED for Strength and Service



To "PAYNEHEAT'S" 30 years' specialized experience and nationwide reputation for fine furnaces are now added the great resources and technical facilities of Dresser Industries, Inc. ★ Thus, sales horizons are widened, postwar opportunities enlarged for PAYNE representatives everywhere. And they will have, as an added, exclusive sales stimulant



PAYNE
"ZONEAIR"
Compact,
streamlined,
efficient. Dis-
tinguished by
advanced en-
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PAYNE ZONE-CONDITIONING

Circulated winter warmth, cooling summer ventilation, controlled by zones, rooms or apartments . . . successor to old-fashioned central heating!

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PAYNEHEAT
OVER 30 YEARS OF LEADERSHIP



**"FIELD
DRAFT
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*Keep my
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Fuel savings range up to 25%, heat is more even, more steady — with a FIELD DRAFT CONTROL on the job. But be sure it's a FIELD you install. For the most accurate, most durable, most dependable draft control made today is the FIELD DRAFT CONTROL. It is used as a standard of comparison with manufacturers, dealers and consumers. Write us today for full information.

GATE BALANCED
AT FACTORY

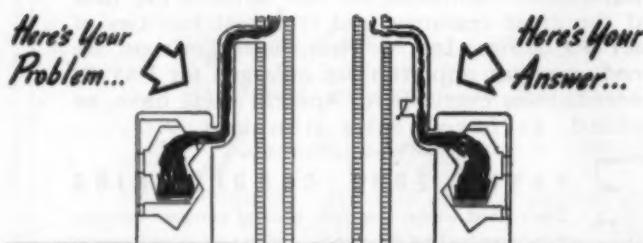
MADE OF HEAVY
MATERIAL

DOESN'T CLOG
OR WARP

ROLLING TYPE
HINGE PIN

QUICKLY
RESPONSIVE

FREE SMOKE
PASSAGE



Excessive chimney drafts (found in 9 plants out of 10) draw valuable heat up the chimney. But the FIELD DRAFT CONTROL holds these drafts at all times to a minimum, thereby saving critical fuel and increasing heating plant efficiency.

field

CONTROL DIVISION OF H. D. CONKEY & CO.
MENDOTA, ILL.

Local WMC Authority

AUTHORITY to act on manpower controls in such a way as to head off unemployment during the reconversion period has been extended to local or area officials of the War Manpower Commission.

"What the new procedure does," says WMC, "is to permit area WMC officials, in consultation with Area Management-Labor Committees, to move to retain, modify, or reapply any or all manpower controls in an area or plant as labor conditions warrant. Before such action can be put into effect, however, it must have the approval of the regional director who will be guided in his decision by national standards. Thus, local or Area Management-Labor Committees are assured full participation with area directors in decisions that have to be made in modifying the manpower program in accordance with changing labor market conditions in the specific area."

Heating Controls

(Continued from page 63)

version gas burners should be available.

All these products require controls, and as stated, the supply is critical but hopeful. More labor is going to be available with cutbacks and cancellations of war contracts. The trend now, of course, is to do away with restrictions on all materials but it is recognized that these cutbacks have not yet affected many of the original material sources of supply and it is a problem for manufacturers to get materials even though restrictions are off.

WPB officials announced to the control manufacturers that with the need for fuel conservation so great they will do all in their power to aid individual manufacturers to get necessary materials.

Konzo-Successful Blower Operation

(Continued from page 79)

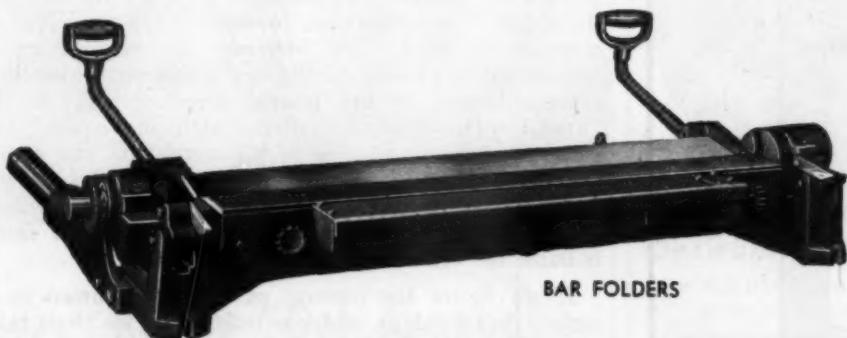
burner operations with the result that the room temperatures wavered up and down. This differential setting was cut down to a minimum of about $\frac{1}{2}$ deg. and extremely satisfactory and frequent operation of the burner was obtained. The temperature control was practically a straight-line control. The writer has reset some field installations with similar improvements in results. (Editor's Note: E. F. Fuller described how to adjust thermostats in April AA, page 68.)

Recent developments, as demonstrated by a manufacturer attending one of the furnace clinics at the University, point towards the use of more sensitive types of room thermostats, which at the same time will be provided with a minimum-operating time arrangement to prevent too-short operation of some types of burners. In simplest terms, we require long operation at low speeds for the blower, and short, frequent cycling of the burner. With this combination of operating sequences, the forced-air system will truly approach the capabilities of a winter air conditioning system.



TEMPERED TO THE TIMES WHATEVER THE CONDITIONS

Correct design, smooth response to control for both accurate and tough operation and long service life, are distinguishing characteristics of this pioneer line . . . now in its 161st year.



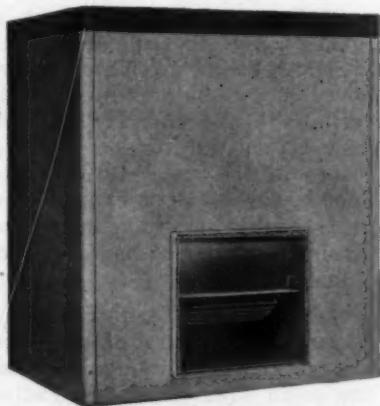
BAR FOLDERS



ELECTRIC COMBINATION ROTARY MACHINE

THE PECK, STOW & WILCOX COMPANY · Since 1785 · SOUTHBURY, CONNECTICUT, U. S. A.

• • • *to insure complete customer satisfaction and increased profits select*



With so many home owners planning to install winter air conditioning, it's just good business judgment to sell equipment that produces customer satisfaction and increasing profitable business.

With over 12 years of satisfactory service in the home, REX Air-Pak Blower Filter Units place the dealer handling them in a preferred position on this valuable background of consumer acceptance.

With restrictions removed, it might be well for you to consider REX Air-Pak now by writing for catalog No 238.

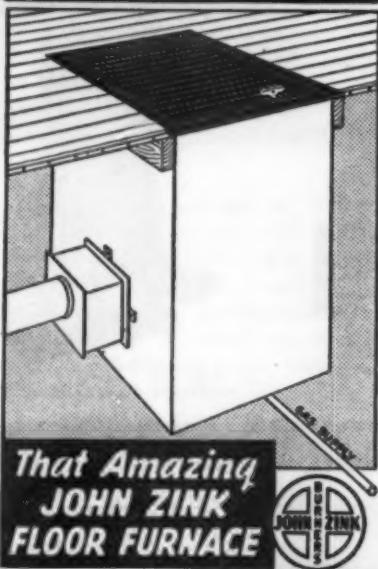


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JOHN ZINK

One of the largest manufacturers of Gas and Oil Burners in the world manufactures a

FLOOR FURNACE



*That Amazing
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"Grain Movement" In Metal Forming

(Continued from page 89)

metals are compositions of grain with smaller spheres in-between. In Fig. 9 we try to illustrate the composition of the *soft* metal, and the composition of the *hard* metal in Fig. 10.

In any kind of sheet metal forming, the rough knowledge of grain structure and displacement will prove beneficial. It will supply the understanding "why" bending the metal "with the direction of the grain" will make a difference as between bending it "against the grain." Also, this knowledge is helpful in determining the amount of metal consumed in radii and "metal shrinkage" in making bends. In the two Figs. 9 and 10 we show the alignment of the grain in "rolled" sheets. The pressure of the rollers moves the grain in one direction, forward, more than it does move it sideways. The "spheres" between the grain become much smaller in the one direction, while they remain larger in the lateral direction. If we do "braking" in what is called "with the grain," we make the bend in an area of the metal that has larger "spheres." But if we brake "against the grain," we do the bending in the grain-congested area, where the metal is that much harder, and in certain cases is liable to "crack."

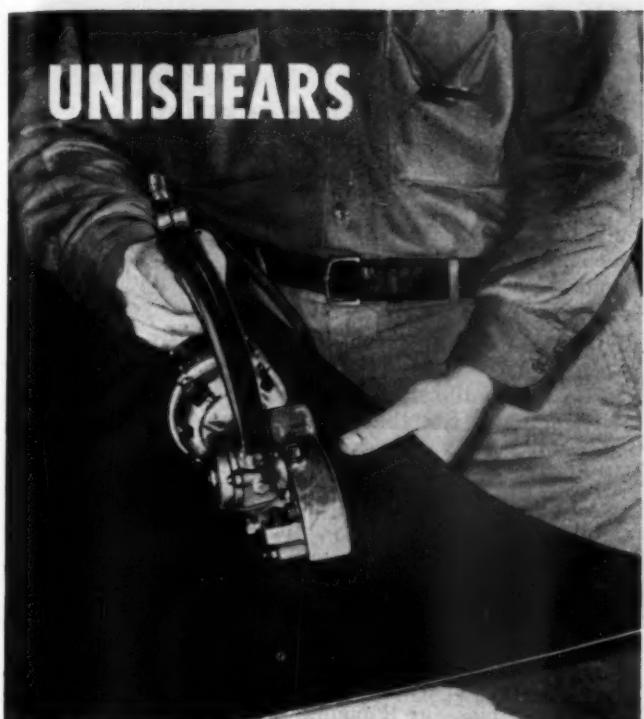
If we figure the amount of metal consumed in a certain bend (blank width calculation), we shall take into consideration that a bend done "against the grain" will differ in metal shrinkage from one done "with the grain." The explanation of the difference in the shrinkage is—that in a cold rolled sheet the grain has been congested in a certain direction, with the other direction remaining less congested and more receptive of the "moving" grain in braking.

In press brake forming this knowledge of "grain movement" is helpful to the operator. Once we have the idea of the metal's composition or grain structure and of the grain being "moved" in bending the metal, we can that much easier calculate the amount of grain to be moved in a certain radius and degree bend and predetermine brake capacity accordingly. In Fig. 11 we show a "natural" inside radius bend. We see that the area of the metal formed into the outside radial is not compressed but expanded, which means that the grains in this area have moved farther apart, and that "grain compression" has occurred only in the area of the inside radial.

In Fig. 12 we show a "sharp" bend, with no inside radius to speak of, and in this kind of bend there is compression of the grain owing to the "forcing" of the metal into the small area under the radius-less nose point of the male die. The "grain" in metals resists both compression and expansion of the "spheres," although it is much easier to expand or "draw" than it is to compress. Workers in sheet metal know this by their experience with "edging" a round sheet metal object (cylinder, cone, etc.) to the outside, where the metal expands, and doing so to the inside, where the metal must be compressed.

In a subsequent article in this series we shall deal with press brake formations in which the dislocation of the grain in the metal will be more pronounced, this dislocation being more of the "expanding" species, such as occurs in "drawing" the metal in multiple form dies.

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Model 16A and other Unishears are paying their own way in many sheet metal shops by boosting output, lowering costs. There's a Unishear that will fit *your* sheet metal cutting problem. Why not ask your distributor? Stanley Electric Tools, Division of The Stanley Works, New Britain, Connecticut.

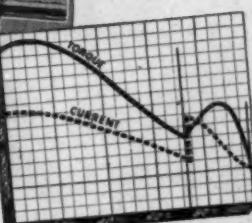
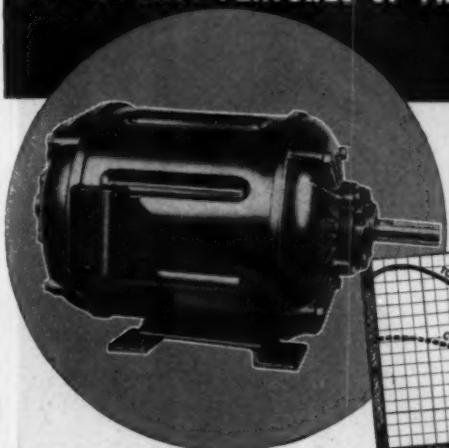
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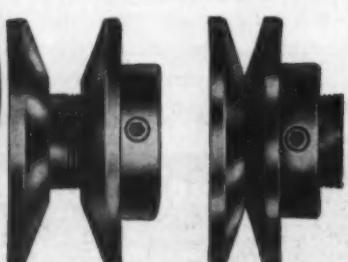
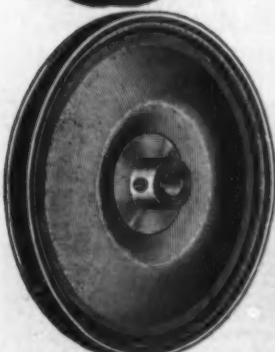
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Oil Burner Service

(Continued from page 75)

the burner circuit on reaching the pressure setting of the control.

To adjust the direct action models, turn the pressure adjustment knob until the pressure indicator is opposite the marking on the pressure scale corresponding to the desired pressure cut in point. Turn the differential adjustment knob until the differential indicator is opposite the marking on the differential scale corresponding to the desired differential.

To check calibration on these controls, use a standard test gage. Set the pressure and differential indicator to a desired pressure and differential. Slowly build up the pressure until contacts close.

Direct action models should open and reverse models should close the burner circuit at the boiler pressure setting plus the differential. Then slowly lower the pressure. Direct action models should close the circuit and reverse models should open the circuit at the scale pressure setting. Thus assuming the scale pressure to be set at 5 pounds and the differential at 3 pounds, the direct action will open at 8 pounds and the reverse action will close at 8 pounds and open at 5 pounds.

Mercury Switch Controls "Vaporstat"

Diagram 13 is a type of "Vaporstat" which is widely used on vapor heating and steam systems operated on the simple principle of tilting a mercury switch by a linkage mechanism actuated by the expansion and contraction of a metal bellows.

As the pressure rises, it acts directly to increase the length of the bellows which in turn is transmitted through the linkage and tilts the mercury switch to the off position and opens the burner circuit. Dropping pressure reverses this movement and closes the burner circuit. Adjustable springs regulate the on and off pressure at which the vaporstat will operate. When direct action controls are used as a high limit or an operating control on steam systems, the pressure control should be located on the boiler so that it will be subject to the maximum steam pressure.

Diagram 14 shows the method recommended by one manufacturer to insure long and dependable operation. This control is connected to the top of the boiler by means of a siphon between boiler and control as shown in diagram.

Diagram 15 shows a wiring diagram for a "Pressuretrol" with a line voltage thermostat.

Limit controls for the most part operate on a two pole line voltage circuit in parallel with the main supply circuit. Certain controls, however, operate on a 3 pole circuit in parallel with the thermostat low voltage circuit. Their placement must be in accordance with manufacturers specifications for the various heating systems, coal, gas, or oil, direct fired warm air, indirect or split steam, hot water, or vapor vacuum heating systems. The performance of the various heating systems. The performance of the various makes is quite similar, but the control mechanism differs in many respects.

In order to gain a complete knowledge of all controls, one must obtain a complete set of burner control manufacturers specifications, manuals, and hand books.

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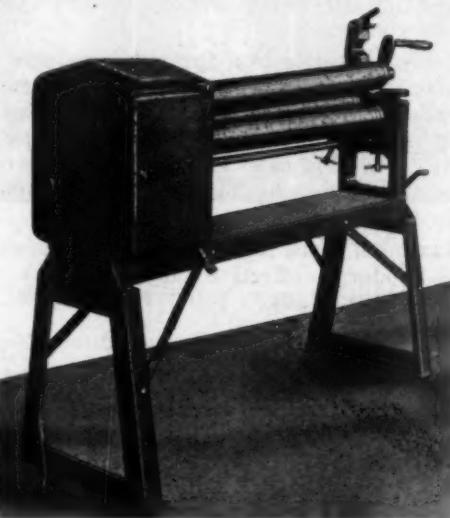
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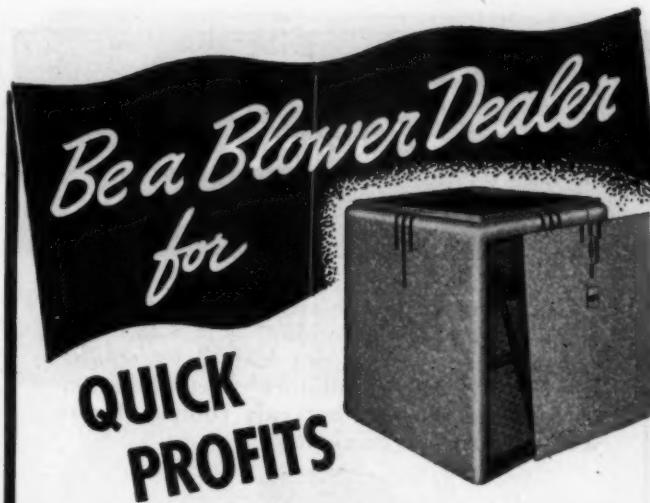
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**Amendments,
 Interpretations**

(Continued from page 66)

fixed at the shipping point price plus the established charge for transporting the product from the shipping point to the point of delivery.

Where out-of-town delivery is made in a vehicle owned or controlled by the shipper, the maximum transportation charges must not exceed the established railroad freight from the railroad siding at or nearest the shipping point to the railroad siding at or nearest the point of delivery for the quantity shipped.

Where local delivery is made in a vehicle owned or controlled by the shipper, a maximum delivery charge of 10 cents per hundred pounds may be added to the shipping point price. A minimum shipping charge of 50 cents is authorized.

Where shipment is made in a truck owned or controlled by the buyer, the seller may not add any transportation charges to the maximum shipping point price.

The foregoing ceiling prices are established in Maximum Price Regulation No. 310—Reusable Iron and Steel Products. The scope of this regulation is extended by today's action to cover all reusable iron and steel products previously covered by Revised Price Schedule No. 49.

The definition of reusable iron and steel products is revised to include not only used iron and steel products but also iron and steel products salvaged from structures such as storage tanks that have been installed or erected but not placed in service, and iron and steel products that have been prepared for installation or erection but which have not been restored to their original condition.

The definition of reusable iron and steel products is changed so that it no longer includes new materials such as crop ends of unused plates or structural shapes originating in ship builders' or other fabricators' yards or plants. All new crop ends of plates, structural shapes and shafting are now covered by Revised Price Schedule 49.

(Revised Maximum Price Regulation 310—Reusable Iron and Steel Products—effective June 26, 1945.)



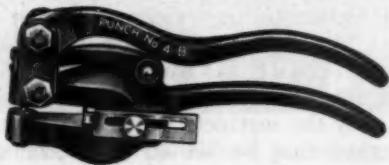
**Kruckman—Surplus
 Property Situation**

(Continued from page 65)

almost all other Government agencies which have certain rights to sell Government property under authority of more than 250 laws which are on the Statute books. The Law also compels the Surplus Property Board to secure approval for any transaction that involves a Million Dollars or more from the Anti-Trust Division of the Department of Justice. And, finally, the Board has been hamstrung by a lack of funds. The Act, which would give it \$40,000,000 to operate, has been hanging fire in Congress for months.

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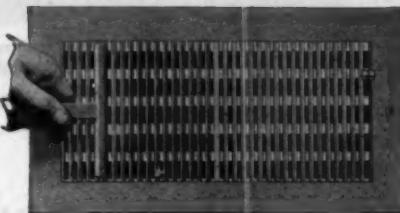
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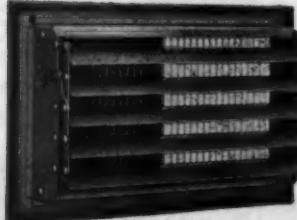
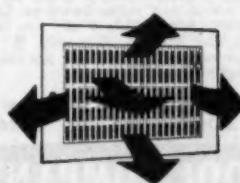
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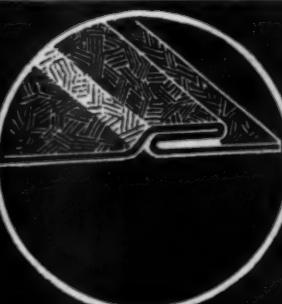
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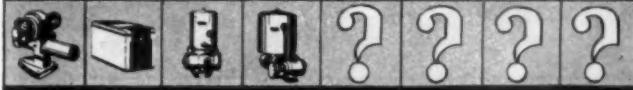
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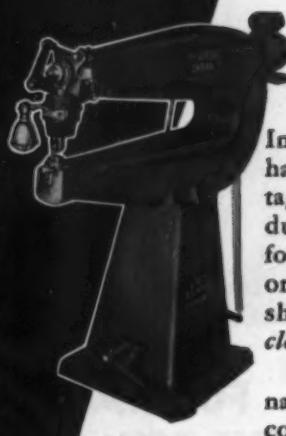
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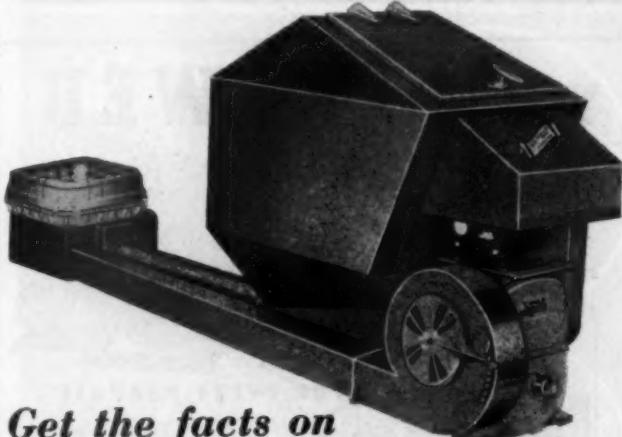
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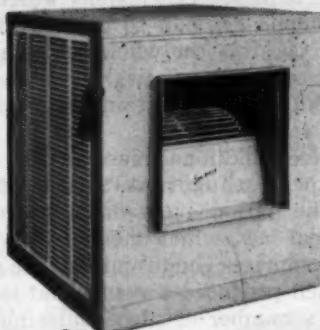
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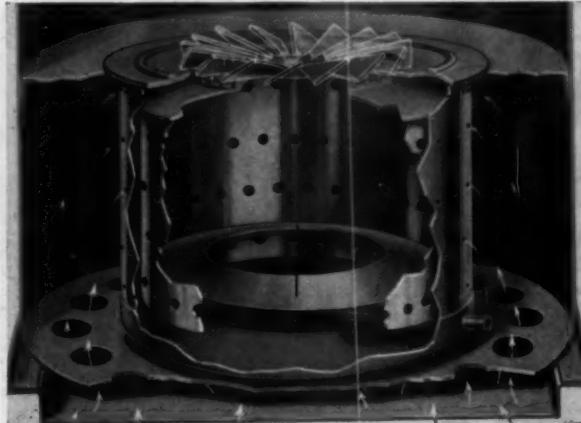
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NOW is the time to finish up those furnace repair jobs so that your customers have trouble-free heating service this winter. And the way to be sure that your furnace repair jobs are really done right is to use Northwestern furnace repair parts. Northwestern continues to stress *quality first*, so try Northwestern first for quality parts!

NORTHWESTERN STOVE REPAIR COMPANY

662 West Roosevelt Road, Chicago 7, Ill.



Famous Patented *Monogram* Vaporizing Burner for Highest Known Efficiency With Oil

MONOGRAM'S exclusive engineering achievement which converts oil to gas and mixes the gas with air before combustion produces a flame that is hotter, cleaner, more efficient under all conditions . . . it is the highest known efficiency attainable with oil. Get complete information on the Monogram Vaporizing Oil Burner today!

The QUINCY STOVE MFG. COMPANY
QUINCY, ILL.

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Delavan has been exclusively licensed (under the Balloffet patents) to manufacture and sell Balloffet nozzles. Deliveries are now being made as rapidly as our war production permits. Send in your orders NOW.



Sales Engineering Representatives
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Ore., San Francisco, Calif., Los Angeles, Calif.
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SELL *Brundage*
BLOWER ASSEMBLIES
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... AND YOU SELL
RELIABLE PERFORMANCE



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PDRM
UPBLAST
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Blower Specialists
Since 1919

KALAMAZOO 11, MICHIGAN

THE
Brundage
COMPANY

one man, the Administrator. Congress will investigate and will develop some unhappy conclusions which are expected to lead President Truman to get rid of the Hellman-Hurley team, possibly the whole team including his own new appointee, W. Stewart Symington, of St. Louis; and Congress will certainly amend the law to make it workable.

The core of the whole functional mess is that Congress responded to the sizzling heat turned on by greedy segments of the nation everywhere, and Congress enacted a political law, which means a law full of compromises, and comprises compromising the original compromises, which produced a result that is like a jig-saw puzzle with a number of pieces missing and a number of pieces that don't belong. On top of this performance Mr. Truman's predecessor, immersed in world politics, appointed a Board something like the

WISS "METAL MASTER"

Compound Action AVIATION SNIPS



Used extensively by leading aviation and metal working industries and in U. S. Government Plants throughout the country.

- Cuts circles, squares and irregular patterns on Stainless, Dural, and Monel Metals with ease.
 - All Parts interchangeable.
 - MI for cutting left—M2 for cutting right.
- WISS BULLDOG AND STANDARD PATTERN SNIPS are used in Shipyards, on Government construction projects, and on maintenance work wherever sheet metal is required.

Send for literature of complete line
J. WISS & SONS CO.
ESTABLISHED 1848

NEWARK 7, N. J.

SHEET METAL MEN should know more about this machine



KALAMAZOO
Metal Cutting Band Saw

SAVES
EVERY
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SHOP

Why let high priced labor cut by hand—lengths of angle iron—rods—tubes—bars, etc.—when this low priced machine does these jobs with amazing Speed and Accuracy? Pays for itself in Labor Saving and Steps up Production. Scores of shops say "just what we've always wanted."

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Kalamazoo Tank & Silo Co. — Kalamazoo 16, Michigan

**SAVE TIME
SAVE SPACE
SAVE GAS**

SPEED PRODUCTION
with *Quick Acting*
JOHNSON Furnaces

NO. 101 BENCH FURNACE

Powerful—Efficient—Economical
Gives 1800° F. Without Blower!

Designed for heating soldering coppers up to 12 pounds per pair. Ideal for heat-treating, tempering, annealing, or case-hardening carbon steel tools. Firebox 3 1/2" x 4 1/2" x 5 1/2" heavily refractory lined. Complete with baffle plate and work rest block.

**\$13.50 F.O.B.
FACTORY**



Write for FREE copy
of complete Johnson
Catalog.

NO. 70 HI-SPEED BENCH FURNACE

Heats 2250° F. in 30 Minutes!

Designed primarily for high-speed steels, this remarkable furnace is equally efficient for hardening any steel tools, dies, punches, or small metal parts. Firebox 5 x 7 1/2" x 9" lined with high temperature refractory. Economical to operate. Equipped with Carbofrax hearth, G. E. Motor and Johnson Blower.

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ORDER TODAY!

Parts available for any
Johnson Furnace built
since 1901!

JOHNSON GAS APPLIANCE CO.
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**BRONZE POWDERS
soon available!**

Under tentative government regulations now pending, Illbronze Brand Bronze Powders will probably again be available to our customers early this fall. We will then be able to supply users of metallic finishes with our many special shades in various textures. Our many friends who have used our pre-war line of special alloys and colored metallic finishes can look to Illbronze with confidence for their future needs. Right now, we can apply Illbronze Brand Aluminum Paste and Powder, Chrome Finish Paint and our famous "445" Heat-Resisting Aluminum Paint.

Prompt Shipments on all Aluminum Products
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ILLINOIS BRONZE POWDER CO., INC.

Dept. 445A—2023 S. Clark St., Chicago 16

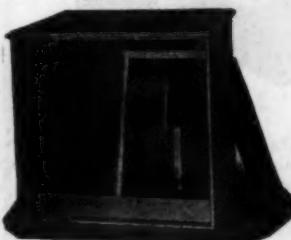
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SERIES 2000
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TYPE E
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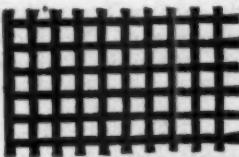
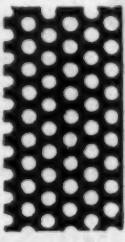
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METALS
ARE ESSENTIAL**

In Times of War and Peace

They are used in the manufacture of explosives and ammunition, flame arresters, airplanes, battleships and in many important and essential industries such as the processing of grain, food products, chemicals, metals, coal, petroleum, etc. We make all sizes and shapes of holes to meet the most exacting conditions.



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PERFORATING**

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BEFORE YOU INVEST IN A STOKER
INVESTIGATE THE FREDERICK . . .

Frederick Stokers deliver maximum amount of heat from every ton of coal consumed.

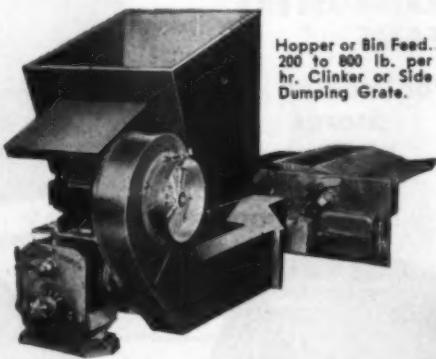
This is due to Frederick design which insures (1) thorough fuel combustion (2) maximum utilization of heat-giving gases and (3) results in less coal burned and more heat generated.

Frederick Stokers are constructed to withstand the rough usage of industrial installations. Send for the stoker catalog and find out about Frederick engineered features—

- A—Fully active grate surface . . . no dead plates.
- B—Continuous speed type transmission.
- C—Completely enclosed windboxes and mechanism.

For these and other reasons the Frederick Stoker is highly regarded and widely used. Write for catalog . . . today.

WE ALSO MANUFACTURE fine Centrifugal Pumps . . . especially designed for efficient service in a specific industry. Engineering consultation available without obligation.

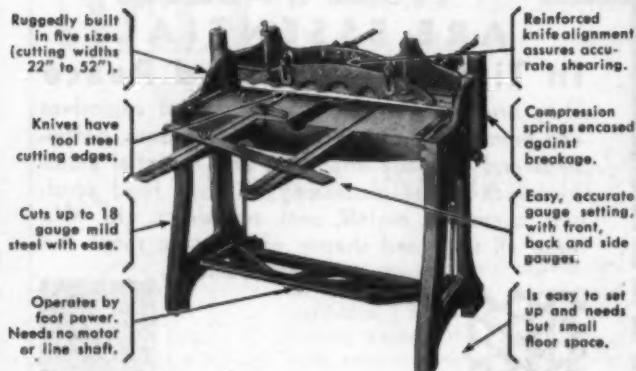


Hopper or Bin Feed.
200 to 800 lb. per
hr. Clinker or Side
Dumping Grate.

THE *Frederick* IRON & STEEL CO.
Frederick, Maryland

STOKER SPECIALISTS SINCE 1918

8 Reasons for Selecting famco Shears



There are many reasons for selecting Famco Foot Powered Squaring Shears. They require small investment and low operating cost . . . are powerful yet consume no power. Write for descriptive folder today.



POWERFUL PRESSES THAT NEED NO POWER

Famco Foot Presses, made in 10 models (bench and floor stand types) are widely popular for light forming and stamping operations.



Famco Arbor Presses deliver up to 15 tons pressure without power cost. Make assembly or dismantling easy. 32 models, in bench or floor types.

FAMCO MACHINE COMPANY, 1314 18th STREET, RACINE, WISCONSIN

famco COST CUTTING **machines**
ARBOR PRESSES • FOOT PRESSES • SQUARING SHEARS

original TVA Board, made up of incompatible personalities, but whose selection wiped off political debts. Thus the surplus problem, full of TNT, was turned over to the men with no business knowledge, functioning under a Law made for the sake of currying favor with political friends and not primarily to solve the surplus puzzle.

In the last analysis business men, like other voters, are just as culpable as Congress, the White House, and any other element for the disaster. If the stockholders in the corporation fail to look after the affairs that touch their welfare they usually find that the affairs get into a snarl. Apparently most of us are so busy now looking after our intimate affairs at home that we let things slide until the situation develops into a jam like the one that lead Senator Gillette to

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SHEET METAL FURNACES
AIR CONDITIONING SUPPLIES

MANUFACTURERS Are You Looking For An AGGRESSIVE DISTRIBUTOR?

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Premier FURNACE CLEANER

BUILDS UP
SERVICE VOLUME!

The sturdy Premier Furnace and Boiler Cleaner works as your best ally in developing service business in volume—it gives you first-hand knowledge of needed repairs while it brings you profits on cleaning jobs! It's rugged and powerful, yet compact and light weight—easily carried and operated by one man. Write today for complete information.

NEW IMPROVED MODELS

Completely Equipped

½ H.P. . . \$74.50
1 H.P. . . \$89.50

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CLEANER CO., INC.
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YOUR STOKER OPPORTUNITY IS HERE... **NOW!**

If you are going to share in that tremendous postwar stoker market, now is the time to begin, and in making a choice, remember that extra values are always easier to sell.

GEHL STOKERS OFFER EXTRA VALUES



• A stoker engineered to do a better job, for more years, by a 78-year-old company. • Merchandising experience that understands the stoker dealer's needs and selling problems and knows how to help him solve them. • A name with an established reputation in the stoker field.

Gehl Industrial Stokers are selling NOW to office buildings, hospitals, schools, churches, hotels and other places that use 25 tons or more of coal per season. There is a big backlog demand for Gehl domestic models as fast as they are available.

GEHL BROS. MFG. CO.
Established 1867
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WRITE today for literature and dealer plan.

A GEHL WINS FRIENDS WHEREVER IT GOES

PLASTIC FAN BLADES AND BLOWER WHEELS



BETTER FAN satisfaction is assured when you equip your fans with Burden Plastic Blades. These quiet propeller type modern blades have a much lower noise level. They have longer life and weigh only 1/5th to 1/4th as much as metal blades. Yet they have the same structural strength.

Burden Blades have been tested from—60 to 300 F. They are resistant to corrosive action. Low moisture absorption.

3 TYPES — MANY SIZES

Overlapping — Cloverleaf — Single Blade

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BURDEN FAN and BLOWER CO.

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ATH-A-NOR FURNACES AND PARTS

For more than 50 years the name Ath-A-Nor has meant top quality and best performance in furnaces. Economy and efficiency are the best-known qualities of the Ath-A-Nor furnace and of Ath-A-Nor furnace repair parts. Buy and install Ath-A-Nor for best results and greatest fuel economy!

MAY-FIEBEGER COMPANY
MANUFACTURERS OF QUALITY HEATING EQUIPMENT FOR
OVER 50 YEARS
NEWARK, OHIO

**IT SAWs!
IT FILES!**



A PORTABLE
POWER-SAW
AND FILE

New

MULTI-PURPOSE TOOL
SAVES TIME — SAVES MONEY

★ The Saw-Chief attaches to electric and air drills, or may be driven by flexible shaft. Hack-saw blade in holder reciprocates rapidly with a 7/8" stroke. Cuts all metals—every gauge, wood, plastics, other materials. Eliminates slow, tiresome hand-sawing operations. Reaches into hard-to-get-at places with ease. Insert ordinary machine file for power-filing operations. It's portable . . . carry it from job to job.

QUICK DELIVERIES ON AA-B PRIORITY OR BETTER

The Saw-Chief can be shipped quickly, ready for attaching to your drill or flexible shaft at only \$45.00. May also be obtained complete with heavy duty drill at \$90.00, or with high-powered, light-weight drill at \$83.00.

LIBERALLY GUARANTEED

SAW-CHIEFS are guaranteed to give complete satisfaction. You may be refunded if the SAW-CHIEF does not save hours of labor on countless operations.

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ORDER **SAW-CHIEF** TODAY

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PLANNED SERVICE



The Grand Rapids Furnace Cleaner increases your profits by enabling you to merchandise through your service department. While you make money on the cleaning you make an additional amount by selling new equipment and repair jobs. This planned service pays in a third way, too, for it saves vital fuel by keeping your customers' furnaces operating efficiently.

The sturdy Grand Rapids Furnace Cleaner is soundly engineered to give years of satisfying service. It cleans thoroughly, sucking out all dirt and dust, eliminating "plug up" conditions. Quickly cleans furnaces, boilers, chimneys, stokers, oil burners, heaters — or the entire basement. Write for complete details.



GRAND RAPIDS FURNACE CLEANER

MODEL OF *The Doyle Vac-It*

DOYLE VACUUM CLEANER CO., 227 Stevens St., S. W., Grand Rapids 7, Mich.

THE MOREY FLOAT VALVE is especially designed for evaporative coolers, small cooling towers, stock feeders, and has many other uses. Materials are corrosive resistant. Iridite plated. Non-Water Absorbing Polystyrene Float. Will flow 70 G. P. M. at 20-lb. pressure. $\frac{3}{8}$ " pipe connection.

List
Price
\$2.00



Usual trade discounts.
Send for sample.

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Distributors Wanted.



the bitter conclusion that one manager can do a better job than three. Fortunately Mr. Truman sincerely believes this Government is able to function on traditional democratic lines, and he is bound to pick men who can work together as a managing board without making either Lt.-Col. Heller, or Gov. Hurley, the boss of the board. Some folk here think this may not happen for at least six months. However, the Board has an Administrator who appears to think sincerely the Administrator should administrate, while the Board should make policies. The administrator, Col. Alfred E. Howse, is an alert and substantial big business man, a whip-cracker and a driver. With a half dozen Colonels, some Majors, and some lesser military personnel in his organization, they tell you he is put-

IMMEDIATE DELIVERY
FROM STOCK!

CONDUCTOR
PIPES, TOO!

ELBOWS &
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KRAUSER-BOYD, INC.

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LANCOL

A Definitely Better SOLDERING FLUX

FOR STAINLESS STEEL AND ALL ALLOYS

Used exclusively by many fabricators of Stainless Steel and other metals. Flows freely without rolling up. Provides even coverage. Flows through lap joints without tinning before being lapped. Forms perfect bond. Has no strong corrosive action. Odorless—no injurious fumes. Sample for trial on request.

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Majestic

HEAVY DUTY STEEL

Stoker Furnace



THE FURNACE THAT ENDS THE CLINKER PROBLEM

- Specially designed and built for stoker firing
- Suited for any make or type of domestic stoker
- Built-in compartment for convenient dust- and gas-free clinker removal
- Interchangeable panels permit placing stoker on either side
- Rugged, durable, boiler plate steel construction
- Leakproof electric-welded joints inside and out
- A high quality, efficient heating plant at an attractive price.
- Backed by Majestic's 38 years of heating experience!

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Ely Ventilating Specialties

Aluminum Automatic Shutter

A shutter with aluminum louvers. Completely weatherstripped, insuring an exceptionally snug, tight fit, and also freedom from louver flutter. Yet it is more sensitive to air currents than any other shutter on the market, and has swivel joints that never get loose or rattle.

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"ELGO" TYPE
AUTOMATIC SHUTTER
Front View (Closed)

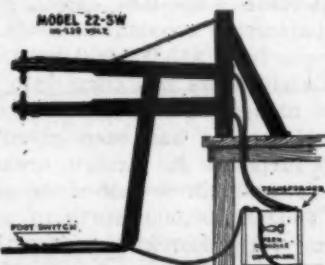
Free
CATALOG

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FERN Klondike Spot Welder

Model 225W Bench Type

Operates on any ordinary 30 or 60 amp. electric service. Spot welds 20 gauge or lighter metal, cold-rolled steel, hot-rolled steel (Clean, Pickled), Stainless Steel, Nickel Plated Steel, Nickel Alloys, Monel Metal, Silicon Bronze Type Alloys, Pure Zinc and Nickel Silver, Unpickled Hot-Rolled Steel, Aluminum and Its Alloys, Tin Plate, Terne Plate, Chrome Plate, Galvanized Iron and other coated materials. The Fern Klondike Spot Welder costs but a third of other spot welding equipment but does the work of machines which cost three times as much. This equipment can be transferred from job to job or can be used on a bench in shop. Can be purchased in an 18 or 20 inch throat, very simple to operate.



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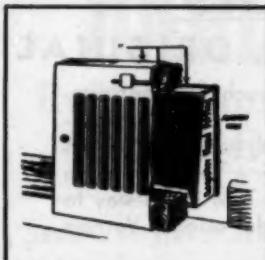


Here's a new idea that revolutionizes ventilating . . . the Air-Van Power Exhauster moves 30% more air at less power cost!

Accepted everywhere for its phenomenal performance, superior design and splendid construction, the Air-Van Power Exhauster is your answer to all ventilating problems! Write for complete details today.

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Get this profitable STREEKNO business NOW!

STREEKNO eliminates dirty, streaked walls. Easy to install. HERE'S PROFIT FOR YOU—Cost of Material—12 Register Packings \$6.60 Plus 5 to 10 minutes installing time per register; your charge to Customers for 12 Registers \$24.00 YOUR PROFIT \$17.40

Order from your Jobber or write for Literature and Details
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LINE UP NOW WITH ECON-O-COL STOKERS



... to cash-in on the huge backlog of stoker sales! You increase your profits through faster sales, make fewer service calls by selling ECON-O-COL's complete line of precision-built, highest quality stokers. And a hard-hitting promotional program backs you up every step of the way! Details of our exclusive dealer franchise, now available in several areas, await your inquiry. Write or wire us today.

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The "Stronghearted" Stoker

BUILT BY COTTA TRANSMISSION
COMPANY • ROCKFORD, ILLINOIS

protects
**MASONRY
CHIMNEYS**

VITROLINER.
—the Superior Vent Pipe

Dodd, Meek & Company

REPAIR CHIMNEYS

for a profitable business
and a satisfied customer

Install Vitroliner Vent Pipe in old chimneys for longer life and protection.

Vitroliner will correct: 1. DEFECTIVE LINING. 2. SMOKE BACK. 3. LEAKY JOINTS. 4. POOR DRAFT. Can be used for ALL fuels. Ideal for gas or oil fired jobs where CONDENSATION is an important problem.

VITROLINER CHIMNEY LINER is heavy gauge, high quality enameled stock iron and is coated inside and out with special high temperature acid resisting vitreous enamel. Bell and Spigot type joint assures a perfect and uniform fit.

Vitroliner Vent Pipe is easy to install in a few hours. Write for Catalog A-5.

15 Years of Successful
Chimney Installations

**CONDENSATION ENGINEERING
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Chisels, punches, drills, nippers and numerous other hand tools . . . quality built for long service. Sold by leading jobbers.

DAMASCUS STEEL PRODUCTS CORP., ROCKFORD, ILL.

REPAIR PARTS

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STOVES—FURNACES—BOILERS

Also

MODERN AIRE FURNACES

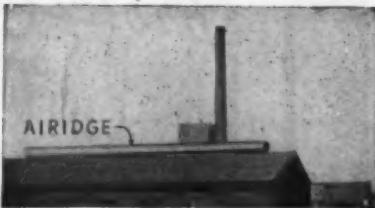
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STOVE REPAIR CO.**

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All materials and sizes. Shipped in 10-ft. lengths. Dampers optional.

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CHICAGO STEEL BRAKE



BEST BY FORTY-TWO YEARS TEST

DREIS & KRUMP MFG. CO.
7404 LOOMIS BLVD.
CHICAGO 38

ting into effect many of the characteristics of the operation of a military bureau. A collision between Col. Howse and the Board is not an improbability if all this is true. Such collision would be likely to spur Mr. Truman to take a hand before the six months have passed.

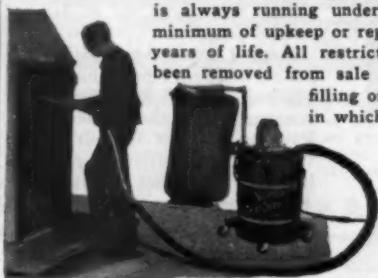
Whole Business Is a Guess

Officials of the Surplus Property Board will tell you, off the record, that figures as we now get them in the large are chiefly estimates, or guestimates. It has been officially stated that 69% or 70% (69 to 70 billions) of the gross surplus total consists of the value of surplus aircraft. War plants, warehouses, and real estate has been roughly appraised at a value of \$16,000,000,000. (As the Law is now on the books it is difficult for the Board to either sell or lease these properties.) This would leave \$14,000,000,000 as the cost value of the RFC capital goods and the Commerce Department consumer goods. Another guestimate ranges from \$15,000,000,000 to \$20,000,000,000.

Lately there has come into existence an organization named the Office of Army-Navy Liquidation Commissioner. It has been given the task of disposing the surpluses in foreign areas. It is estimated the gross total will be half of the grand total in cost value, or \$50,000,000,000 worth of surpluses. The Office of Army-Navy Liquidation has the power to dispose of this vast collection of property as it sees fit. There is no thought that any of this surplus will return to this country. If the Office thinks it is wise, it may accept foreign currencies for the sale of all this property. This program assuredly will please the foreigners, the foreign traders, and will undoubtedly solve many problems of foreign relief.

The Big Oversize Motor Means Added Years of Life

Outstanding dependability and trouble-free operation of Red Streak Furnace Cleaners are assured by the big oversize motor with which all Red Streaks are equipped. This big rugged motor is always running underloaded which means the minimum of upkeep or repair cost and many added years of life. All restrictions and priorities have been removed from sale of Red Streaks. We are filling orders strictly in the order in which they are received.



National Super Service Co., Inc.
1946 N. 13th Street,
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USE ONLY THE ORIGINAL

Vernois furnaces give such fine performance because every part is carefully engineered and manufactured only for Vernois furnaces. When you repair a Vernois furnace insist upon Vernois parts. That is the way to do a satisfactory job! Order original Vernois parts direct from us.

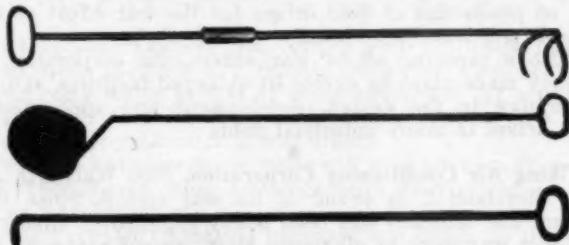
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MT. VERNON, ILLINOIS

*For Balanced
Atmosphere.*

THERMO-DRIP HEAT-CONTROLLED HUMIDIFIERS



AUTOMATIC HUMIDIFIER CO. Cedar Falls, Iowa



ADAMS FIRING TOOLS

CLINKER TONGS
ASH REMOVERS

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Buy Adams Known Quality

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DUBUQUE, IOWA

There's Good Profit for You
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MONMOUTH HUMIDIFIERS

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Descriptive Bulletins and prices
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Formerly made by Monmouth Products Co.
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Roll Forming Machines
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BUILT TO DO YOUR JOBS

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A Type And Size
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PARKER-KALON damper controls



ALLEN SODERING ACID

Another result of Allen research
that helps make your job easier
and more profitable. Use Allen's
sodering products and write for
details of Allen technical service
today.

Allen Sodering Acid
(Item 9-07) is an active
sodering acid for
galvanized and hard to
soder metals and for

old metal that has been
exposed to weather.
Works well on monel
metal (white label
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Send for samples—give us your Jobber's name.

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REPAIR PARTS
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Complete Line of
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FOR QUICK SHIPMENT

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WITH AN
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WELDER

Proven utility for over 26 years in
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Complete Range of Sizes
Lifetime Guarantee!



ACME ELECTRIC WELDER CO.
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ACCURATELY ROLLED ANGLE RINGS



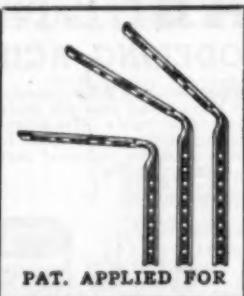
We can fill your order for accurately rolled Angle Rings, with or without bolt and rivet holes, promptly. Write for list of standard sizes and discounts. You can depend upon us for prompt shipments.

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for Belt Drive

New and Improved "EX" Fans are now available in standard sizes from No. 15 to No. 80 and from 200 to 30,000 CFM Capacity with pressures up to 15" W.G. These fans are commonly used for exhaust problems to handle dust, fumes, shavings, etc., but can be adapted for forced draft service.

"EX" Fans are furnished in all standard arrangements of the N.A.F.M. The design is such that it can be easily modified to suit special assemblies; thus "EX" Fans are ideal for resale purposes, as part of factory assembled units.

Write us about your problems. Send for Bulletin No. EX-41

BAYLEY BLOWER COMPANY
1817 South 66th Street Milwaukee, Wis.

WAR TIME



E. L. Payne, president of Payne Furnace Company, Beverly Hills, Calif., reports 133 employees serving with the armed forces as of June 1st.

The Herman Nelson Corporation, Moline, Ill., manufacturer of heating and ventilating equipment, has received the Army-Navy "E" production award for the fourth time.

Robert P. Patterson, Under-Secretary of War, writing to the company and its employees, said that by maintaining the distinguished record which had previously brought them distinction, they are "once again proving leadership on the production front."

The American Blower Corporation has been awarded the Fifth Army-Navy "E" Star for maintaining an excellent record on production of fluid drives for the war effort at their Detroit and Dearborn Plants.

With a tapering off of war orders, the corporation has already made plans to devote its enlarged facilities, skill and experience to the design, development and application of fluid drives to many industrial fields.

Viking Air Conditioning Corporation, 5600 Walworth Avenue, Cleveland 2, is proud of its war record. Since Pearl Harbor the company has been busily engaged in almost 100 per cent war work at all times. Most present contracts have been for such war equipment as the "Water Buffalo" tank, the Army M-4 tank and its various modifications such as the M-32 (Tank Retriever) and M-36 (Tank Destroyer), the CG-4a Cargo Glider, Navy Corsair fighter plane, Army transport ships and pontoon bridge work for Engineer Corps.

Viking has been turning out quite a number of important parts for the turret, housing the 75 MM Howitzer for the "Water Buffalo." Tank contracts have also included many other items such as ammunition boxes and the sighting vanes used in firing the turret guns. One of the proudest records is that the company is the sole manufacturer of an elaborate battery-warming air duct assembly for all the M-4 tanks. In addition, Viking is turning out several parts for the new T-26, which is the latest and most modern of heavy army tanks. For the Navy Corsair, Viking has been producing numerous parts for the center wing section and other "hardware." Main work for the glider program has been the important bellerank assemblies.

Fan production stopped in early '43, humidifier production stopped around the middle of last year, and blowers—up until this year—had been coming out in a "spasmodic trickle." Today, Viking continues with the lion's share of the work still being devoted to war. However, increased facilities have enabled the company to turn out a fairly decent amount of blowers in the past several months. Of course, war work holds top priority, and that will remain the policy until V-J Day.—Mark M. Woolwerth, Sales Promotion Manager.

BARBER BURNERS

For ALL Gas Appliances



S-80



Z-21

We have the facilities and experience for designing and building the exact type and size of burner unit to fit any gas appliance, using natural, manufactured, Butane or bottled gas. We cooperate with any reliable manufacturer in the necessary development and laboratory testing, and in acting as continuous source of supply for his burner units.

Latest Catalog on request.

THE BARBER GAS BURNER CO
3704 Superior Ave., Cleveland, Ohio

TRADE NEWS



The Peerless Foundry Company, 1846 Ludlow Avenue, Indianapolis, Indiana, has been producing a completed item for the Armed Services for three years, and still has orders on file for sizeable quantities.

Robert P. Patterson, Under-Secretary of War, has informed workers of Minneapolis-Honeywell Regulator Company they have been awarded their fifth Army-Navy "E" award for excellency in war production.

The Honeywell organization, first in the Chicago Ordnance district to receive the award in August, 1942, is also the first to win five awards in the same district. It is one of the few companies flying an "E" pennant containing four stars. Its Philadelphia industrial instrument division, Brown Instrument Company, has won the "E" award four times.

Sampsel Time Control, Inc., Spring Valley, Illinois, makes various types of small d. c. motors for airborne application, a radar relay which is part of radar equipment for aircraft, and a primer fuse for shells and torpedoes. Over fifty per cent of current production is war orders.

New office additions being made will give 6,000 sq. ft. more office space. Seven store buildings have been rented in the area as warehouses.

98.6 per cent of employees purchase war bonds on the pay roll savings plan; average more than 8 per cent of pay roll.

Seventy-two employees are in the Armed forces. Two of these have made the supreme sacrifice; one has been a prisoner of war in Switzerland; five have been wounded while in action, and several have seen considerable action.

Sampsel's transportation committee has received a citation from ODT for the efficiency of the operation of the "share the ride plan."—A. W. Dodson, Sales Manager.

Oil-O-Matic men and women have just been officially notified of their fifth Army-Navy Production Award, reports W. A. Matheson, vice president in charge of the Williams Oil-O-Matic division, Eureka Vacuum Cleaner Company, Bloomington, Illinois.

The first Army-Navy "E" Award was made to Oil-O-Matic employees on August 15, 1942; the second on August 21, 1943; the third on August 25, 1944; the fourth on December 2, 1944. The fifth award, just announced, puts a fourth star in the Army-Navy "E" flag which flies over the Williams plant. The flag itself represents one award.

"That Army-Navy Production Award flag is no symbol of mere aspiration or hope. It is a symbol of a living covenant between our fighting forces and the men and women who produce. That covenant has been honored in our plant with sweat and skill and sustained effort. Announcement of our fifth award at this time, nearly two months after V-E Day, shows that the men and women of Oil-O-Matic know there is a war yet to be won!"

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Two trade marks to remember when you want the height of efficiency, beauty and low cost combined in registers and intakes.

AIR-VANE



Dealers Net Estimating book, a time and money saver, sent free upon request.

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NIAGARA VENTILATION AND FORCED AIR FURNACES

DURABLE • EFFICIENT • DEPENDABLE • ATTRACTIVE
THE FOREST CITY FOUNDRIES CO.

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KOOLSTACK FURNACES

FOR STOKERS

OIL or HANDFIRED
50,000 to 200,000 BTU's

Patented Damper
Uses All the Heat
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TO SELL

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For all
Furnaces - Boilers - Stoves
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16-gauge ... \$76
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DRILLS, HOLE SAWS, DRILL STANDS, PORTO-SHEARS,
BENCH GRINDERS, SANDERS, PORTABLE GRINDERS.

CLASSIFIED ADVERTISEMENTS

For rates see page 151

LINES WANTED

MANUFACTURERS REPRESENTATIVE OPERATING IN PHILADELPHIA AND SURROUNDING TERRITORY IS INTERESTED IN TAKING ON A FEW ADDITIONAL NON-COMPETITIVE LINES. Address Key No. 602, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.

AGGRESSIVE REPRESENTATIVE SELLING DEALERS AND METAL SHOPS IN SOUTHEAST WANTS LINES WITH HIGH GRADE MANUFACTURERS OF HEATING EQUIPMENT AND ALLIED ITEMS. FINANCIALLY RESPONSIBLE. Address Key No. 601, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.

Manufacturers' Representative seeking electrical, heating and air conditioning lines, appliances, accessories, specialties, etc. Southwestern territories for present and post-war trade. Address Key No. 599, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.

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Furnace installers
Sheet metal workers
Eavestrough mechanics
Steady work—top wages
Paid vacation with Bonus
Our proposition will interest you.
Address Parker's, 1125 Fourth Avenue, Rockford, Ill.

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WANTED

Wanted—Used angle and elbow machinery. State age, condition and price. Address Key No. 604, American Artisan, 6 No. Michigan Ave., Chicago 2, Ill.



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Furnace Cleaners
A PROFITABLE
POST-WAR BUSINESS

SET yourself up in business for post-war independence. Equip with a TORNADO Furnace Cleaner. As a leverage for selling service and supplies, it's a winner! Powerful. Portable. Easy to operate.

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5082 Ravenswood Ave., Chicago 40

Bremil PORTABLE SHEARS

Your work will proceed faster and neater when you use Bremil Portable Shears on the job or in the shop. Write today for literature showing complete line.

ALL-ALLOY No. 2 cuts up to $\frac{1}{4}$ " steel plate.
ALL-ALLOY No. 1 cuts up to No. 11 gauge strip or sheet.

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Will Cut Soldering Costs In Half
No More Changing of Irons

Always the Right Amount of Heat for the Rightest as well as the heaviest jobs. Especially adaptable for soldering with Victory Solder.



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807 Norwood Terrace, Elizabeth, N. J.

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BONDS!**

AMERICAN ARTISAN

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SERVICE SECTION: Rates for display space in the Service Section are \$5.00 per inch per insertion. One-inch minimum space accepted.

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NOW TWO SIZES
NO. 12
Takes All Sizes Up to 12"
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Takes All Sizes Up to 18"
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WAUKEGAN, ILL.

Drill Concrete the Easy Way



WODACK "DO-ALL" ELECTRIC HAMMER AND DRILL

Saves time and money installing expansion anchors. Drills concretes to $1\frac{1}{8}$ " dia.; metal to $\frac{3}{8}$ ". Two tools in one. Easy to maintain. Universal motor. Star drills in 17 diameters. Also chisels, bull points, etc. Write for bulletin No. 644.

Wodack Electric Tool Corporation
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Telephone AUstin 9866

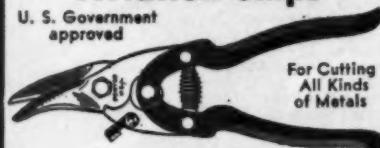
GRAND RAPIDS FURNACE CLEANERS

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**DOYLE VACUUM
CLEANER CO.**
227 Stevens St., S.W.
Grand Rapids 7, Mich.



Pentco Improved Compound Action Aviation Snips

U. S. Government approved



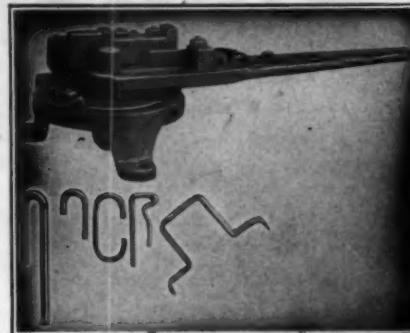
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All Kinds
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A Real Precision Tool!
Maximum Power—Minimum Effort
Right and Left Cut

Blades made from alloy steel hardened and tempered for rough use. Will cut with ease all grades of steel. Side locking feature that will not interfere with cutting blades. Case hardened bolts. Made in four different types. Write for catalog S.

PENN TOOL CO.

2415 N. HOWARD ST., PHILADELPHIA, PA.



THE HINMAN BENDERS

Angle & U, Eye and Pipe

Write for catalog.

manufactured by

L. R. EVANS MACHINE COMPANY
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HEADQUARTERS METAL WORKING EQUIPMENT

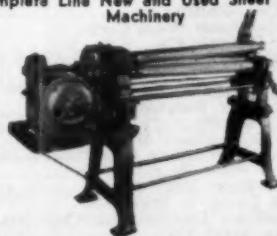
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In Stock—Immediate Delivery
Complete Line New and Used Sheet Metal
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Large and complete stocks!
IMMEDIATE SHIPMENT

MARLEY SPRAY NOZZLES

"Tops" for Air Washing, Humidifying, Brine Spray Lofts, etc. Marley nozzles lead all in sales and in profits to you.

*Finer, more uniform spray
*Effective operation at low
Pressures *No internal parts

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Write for Literature Now!

SOLDERING FLUX

in Liquid, Paste and Salts

STAINLESS STEEL FLUX

SALBRICK

Solid Sal-Ammoniac

LUKENS METAL CO.

3011 E. Hedley St. Phila., Pa.
Jobbers Inquiries Invited

Index

TO ADVERTISERS

Acme Electric Welder Co.	147	Gallaher Co.	145	Penn Electric Switch Co.	20
Adams Co., The	147	Gehley Bros. Mfg. Co.	143	Penn Tool Co.	151
Aeolus Dickinson	146	General Blower Co.	*	Perfex Corp.	14 and 99
Aerofin Corp.	*	General Controls	118	Peterson Co., B. A.	
Air Controls, Inc.	129	General Electric Co.	*	Pocahontas Fuel Co., Inc.	28 and 29
Air Control Products, Inc.	Inside Front Cover	Gerett Corp., M. A.	*	W. F. Potts	151
Airtemp Div. of Chrysler Corp.	106	Gillen Co., J. L.	149	Premier Furnace Co.	112
Airtherm Mfg. Co.	125	Gleason-Avery, Inc.	117	Pryne & Co., Inc.	134
Allen Co., Inc., L. B.	147	Grand Rapids Die & Tool Co.	141	Quincy Stove Mfg. Co.	139
Allen Corp.	*	Grant Wilson, Inc.	*	Radiation Furnace Corp.	*
American Air Filter Co., Inc.	30	Gray, G. L.	138	Randall Graphite Products Corp.	138
American Blower Corp.	*	Hall-Neal Furnace Co.	31	Reiner Campbell Co., Inc.	150
American Brass Co.	52	Harrington & King Perforating Co.	141	Republic Steel Corp.	33
American Radiator & Standard Sanitary Corp.	*	Hart & Cooley Mfg. Co.	106	Research Products Corp.	
American Rolling Mill Co., The	104	Harvey-Whipple, Inc.	*	Revere Copper & Brass, Inc.	93
Anchor Post Fence Co.	15	Heil Co.	17	Rock Island Register Co.	149
Armstrong Co., The	123	Henry Furnace Co., The	47	Round Oak Co.	*
Auer Register Co.	124	Hussey & Co., C. G.	113	Ruby Chemical Co.	
Automatic Humidifier Co.	147	Ilg Electric Ventilating Co.	16	Rudy Furnace Co.	11
Automatic Products Co.	48 and 123	Illinois Bronze Powder Co.	141	Rybolt Heater Co.	34
Barber Gas Burner Co., The	148	Independent Pneumatic Tool Co.	3	Ryerson & Son, Inc., Joseph T.	54
Barth Mfg. Co.	133	Independent Register Co., The	135	Sall Mountain Co.	5
Bayley Blower Co.	148	Interstate Machinery Co.	*	Sampsel Time Control, Inc.	114
Berger Bros. Co.	148	Jackson & Church Co.	107	Schwab Furnace Co.	148
Bethlehem Steel Co.	50	Jaden Mfg. Co.	126	Schwab Safe Co.	138
Beverly Shear Co.	149	Johnson Co., Lloyd S.	*	Schwitzer-Cummins Co.	137
Black & Decker Mfg. Co.	150	Johnson Fan & Blower Corp.	116	Sciaky Bros.	18
Brauer Supply Mfg. Co., A.G.	150	Johnson Gas Appliance Co.	141	Skilaw, Inc.	26
Bremil Mfg. Co.	150	Kalamazoo Stove Co.	111	Smith, R. E.	151
Breuer Electric Mfg. Co.	150	Kalamazoo Tank & Silo Co., Machine Tool Div.	140	Stainless & Steel Products Co.	13
Brown Steel Tank Co.	*	Krauser-Boyd, Inc.	144	Standard Stamping—Perforating Co.	
Brundage Co.	140	Kresky Mfg. Co.	42	Stanley Elec. Tool Div., The Stanley Works	131
Bryant Heater Co.	51	Langsenkamp Co., F. H.	144	State Supply Co.	142
Burden Fan & Blower Co.	143	Lau Blower Co.	115	Stokafire Co.	41
Carey Co., Philip	*	Leader Iron Works, Inc.	149	Stokol Stoker Co., Inc.	10
Carnegie-Illinois Steel Corp.	24	Leland Elec. Co.	*	Sturtevant Co., B. F.	136
Century Electric Co.	100	Libert Machine Co.	138	Superior Sheet Steel Co., The Div. of Continental Steel Corp.	*
Char-Gale Mfg. Co.	*	Lincoln Electric Co.	*	Surface Combustion Corp.	9
Cherry Rivet Co.	46	Lockformer Co.	136	Swartwout Co.	137
Chicago Precision Equipment Co.	143	Lukens Metal Co.	151	Syncromatic Corp.	7
Chicago Steel Service Co.	82	Majestic Co.	144	Tennessee Coal, Iron & R. R. Co.	24
Clarge Fan Co.	133	Maple City Stamping Co.	*	Timken-Detroit Axle Co.	
Clayton & Lambert Mfg. Co.	103	Marley Co., The	151	Triangle Mfg. Co.	110
Cleveland Humidifier Co.	147	Marshalltown Mfg. Co.	*	Tuttle & Bailey, Inc.	*
Cleveland Steel Products Co.	102	Master Electric Co., The	109	Union Mfg. Co.	137
Cole Hot Blast Mfg. Co.	*	Maurey Mfg. Co.	132	U. S. Air Conditioning Corp.	*
Coleman Lamp & Stove Co.	*	May-Fieberger Co.	143	U. S. Machine Corp.	120
Cole Sullivan Engineering Co.	*	McDonnell & Miller	*	U. S. Register Co.	108
Columbus Steel Co.	24	Merbold Corp., The	32	United State Steel Corp.	24
Combustionener	19	Meyer Bro. Co., F.	39	United States Steel Supply Co.	24
Conco Engineering Works	101	Meyer Furnace Co.	39	Universal Power Corp.	*
Condensation Engineering Corp.	145	Milcor Steel Co.	40	Utility Appliance Co.	*
Continental Steel Corp.	27	Milton Equipment Co.	151	Viking Air Conditioning Corp.	133
Cotta Transmission Corp.	145	Minneapolis-Honeywell Regulator Co.	*	Viking Mfg. Co.	12
Crescent Tool Co.	38	Morey, Dan	144	Wagner Electric Corp.	181
Crise Mfg. Co., The	25	Morrison Products, Inc.	*	Waterloo Register Co.	
Dahlstrom Machine Works	147	Morrison Steel Products, Inc.	44	Waterman-Waterbury Co.	70
Damascus Steel Products Corp.	146	Mt. Vernon Furnace & Mfg. Co.	146	Weirton Steel Co.	119
Delavan Engr. Co.	140	Mueller Furnace Co., L. J.	21	Westinghouse Electric Co.	97
Des Molnes Stove Repair Co.	146	National Metal Fabricators	148	Wheeling Corrugating Co.	
Detroit Lubricator Co.	35	National Super Service Co.	146	White Mfg. Co.	136
Doyle Vacuum Cleaner Co.	144 and 151	Nelson Corp., Herman	22 and 23	White-Rodgers Electric Co.	8
Dreis & Krump Mfg. Co.	146	Niagara Machine & Tool Works	127	Whitney Mfg. Co., W. A.	135
Dresser Industries (See Bryant Heater Co.)	*	Northwestern Stove Repair Co.	139	Wiley, John, & Sons	136
du Pont de Nemours & Co., Inc., E. I.		Olsen Mfg. Co., C. A.	43	Williams Oil-O-Matic Corp.	6
Elaterite Plastic Prods.	121	Omaha Stove Repair Works	147	Williamson Heater Co.	135
Electric Vacuum Cleaner Co.	142	Osborn Co., J. M. & L. A.	*	Wilson, Inc., Grant	*
Eigo Shutter & Mfg. Co.	145	Owens-Corning Fiberglas Co.	45	Wise Furnace Co.	*
Evans Machine Co., L. R.	151	Packard Elec. Div. General Motors Corp.	*	Wiss & Sons Co., J.	140
Excel Htg. & Air Conditioning Co.	145	Palmer Mfg. Co.	139	Wodack Electric Tool Co.	151
Fairbanks-Morse Co.	*	Paragon Electric Co.	*	Wood Industries, Inc., Gar.	53
Famco Machine Co.	142	Parker-Kalon Corp.	147	Wolff & Co., Benjamin	
Fern, Ralph	145	Payne Furnace & Supply Co.	127	Yoder Co.	*
Field Control Div., H. D. Conkey & Co.	128	Peck, Stow & Wilcox Co.	129	York-Heat Div. York-Shipley, Inc.	
Fireline Stove & Furnace Lining Co.	122	Peerless Elec. Co.	*	Zink, John, Co.	130
Fitzgibbons Boiler Co., Inc.	49	Peerless Foundry Co.	139		
Follansbee Steel Corp.	125	Penn Boiler & Burner Mfg. Co.	36 and 37		
Forest City Foundries Co.	149				
Frederick Iron & Steel Co.	142				
Freeman Stoker Div., Illinois Iron & Bolt Co.	*				
Front Rank Furnace Co.	*				
Furbio Co.	*				

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Moduflow Users are Your Best Salesmen!

- "Next to the purchase of war bonds, I consider the Moduflow control system my best buy."
- "Would not take \$1000 for mine if I could not get another."
- "This is the first winter we have been able to enjoy our home."
- "Moduflow results have far exceeded the most extreme statements made in your advertising."
- "In effect, Moduflow has added a room to our home during the heating season."
- "Since Moduflow was installed we have enjoyed a more comfortable home than we thought possible."
- "We are getting steady, even temperature at all times all over the house. It is the last word in house heating."
- "Since Moduflow has been installed the same floors are warm enough to allow the baby to play on them and we are able to set our thermostat much lower."
- "I am delighted with Moduflow and take pleasure in recommending it as being the perfect heat control system."
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THE EXCERPTS above were taken at random from many unsolicited letters in our files extolling the merits of the Moduflow System of temperature control — the greatest advance in home heating since the inception of automatic heat. Names and addresses of the writers are available upon request. If you are not preparing your-selves to capitalize upon the tremendous interest and enthusiasm shown over Moduflow, you are missing a bet. So, if you do not have a copy, write at once for our "Engineering Guide of the Moduflow Control System for Home Heating and Air Conditioning." Minneapolis-Honeywell Regulator Company, 2726 Fourth Avenue South, Minneapolis 8, Minnesota.

Mr. Grossman -
Please send literature on Moduflow.
I have been hearing the
name so often so interested
in the Day-Night Bank as is on
order for mine. I would like
to know more about
it.

P.D. Peacock
Perry, Ontario

20
151
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29
151
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134
139

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114
148
138
137
18
26
151
13
*

131
142
41
10
136

*
9
137
7

24
110

137
120
108
24
24

131
12

131
70
137
119
97

136
8
135
136

6
135

140
151
53

130

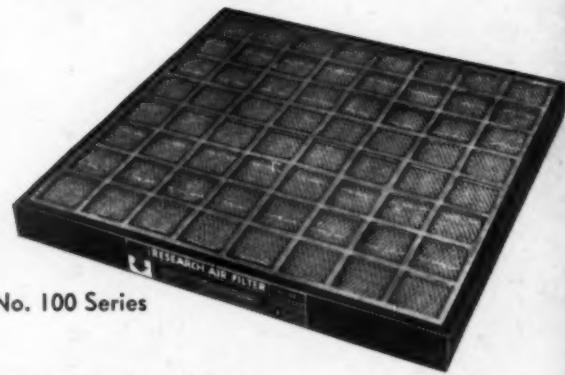
1946



Don't Get Back of the 8 Ball

Be ready for the AIR FILTER business that's sure to come this fall

Predicted fuel shortages for the coming winter make home-owners more and more conscious of the necessity of changing to clean air filters—for tests show that clean filters can reduce fuel bills as much as 7 per cent. 75 per cent of modern homes have air filtering equipment. Here's a wonderful market for you—not only for the sale of air filters but for the many service jobs involved in furnace and air conditioning maintenance. Capture this market by featuring RESEARCH AIR FILTERS—the best by every test. But act now—to have your stock on hand when the season opens.



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Research Air Filter . . .
30,000 tiny baffles in every square foot
to catch dust and lint, high efficiency,
low restriction.



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